

MECHANICAL GENIUS, As Exemplified in the Person of JOHN M. CASE.

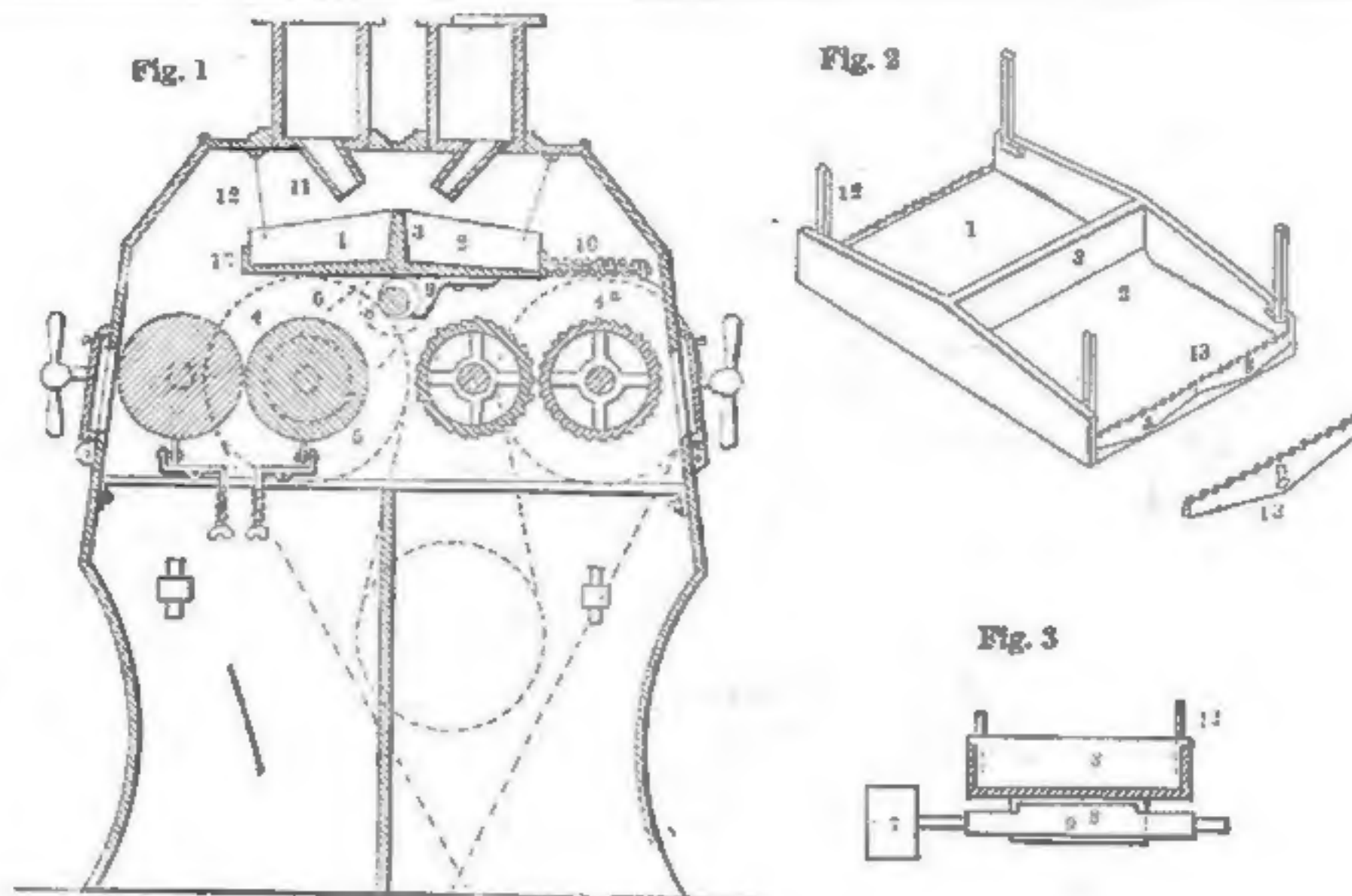
A Few Causes which have Led to the
REMARKABLE SUCCESS
In the Business Career of
THE CASE MFG. COMPANY.

THE *Sunday Capital* of Columbus, Ohio, in a recent issue, had the following: "Three years ago J. M. Case, a mechanic and inventor from Athens, began the manufacture of mill machinery in this city on a very limited scale in a small building on Spring street. He afterwards moved into a room in Hildreth & Martin's planing mill on West State street, where increasing orders enabled the master workman to add six or seven men to his force. The growth from this small beginning has been as remarkable as anything in the history of Columbus. The business has expanded until now 125 skilled mechanics are employed at the large works, and as many more, mostly millwrights and the like, in setting up the machinery throughout the country. From \$8,000 to \$10,000 a month has been paid out during the past year for wages, or nearly \$120,000 in the aggregate, and the works ship out more manufactured articles from the city than any other, the Columbus Buggy Company alone excepted."

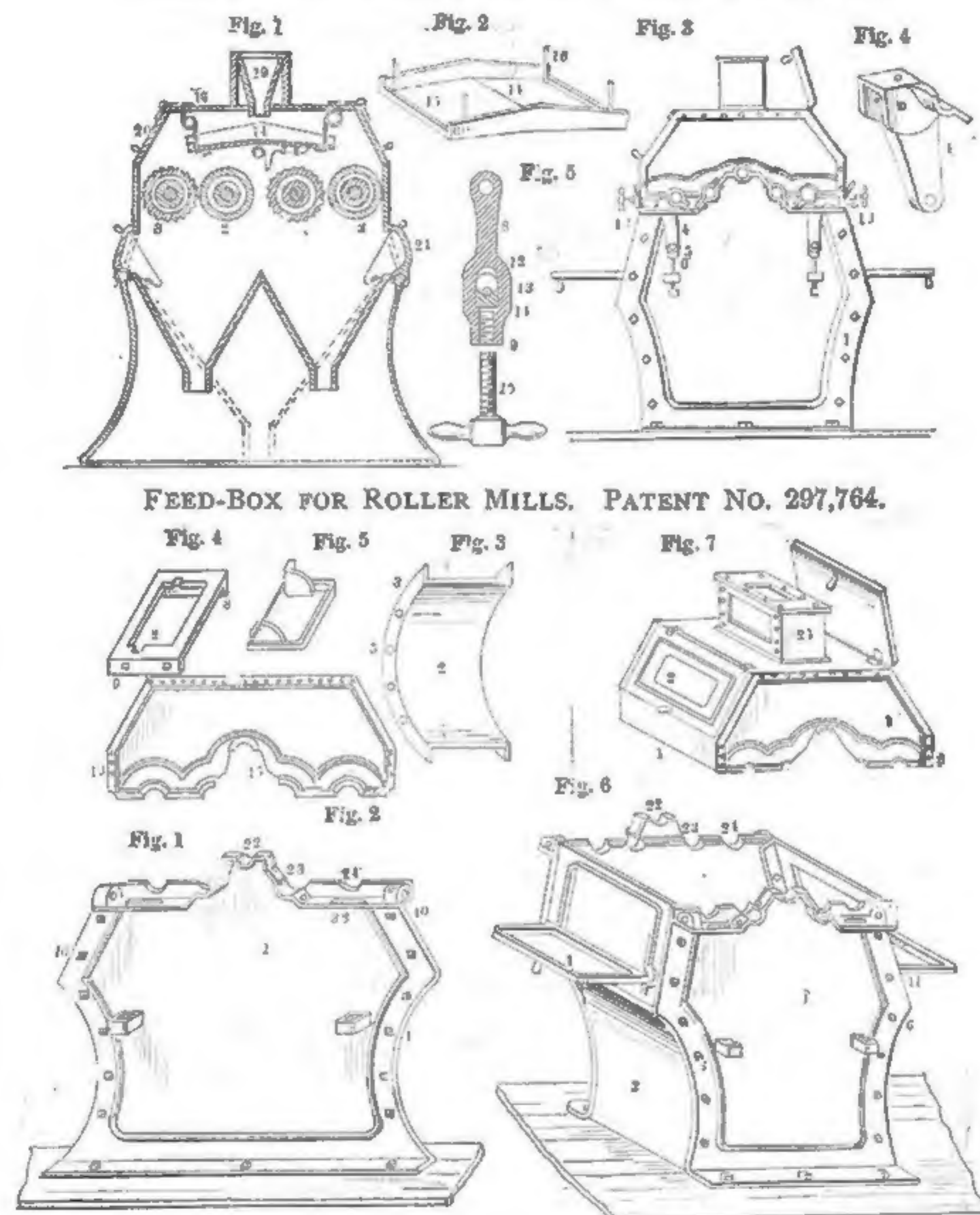
The simple fact that the demand for the specialties of the Case Manufacturing Company has necessitated an increase in the working force of the establishment from six or seven men three years ago, to one hundred and twenty-five at the present time, is of itself sufficient to call for more than mere mention, and THE MILLING WORLD is inclined to attribute as the prime cause of the wonderful expansion, the possession by Mr. John M. Case, of mechanical genius, inventive talent, and extended practical experience in the chosen field of his labors. A visit to the shops of this company discloses that mechanical difficulties and problems arise but to be surmounted and quickly solved by him. A variety of special labor-saving tools are to be found in the different departments of that extensive establishment, which have been designed by, and constructed according to directions from, him. His aim having apparently been to reduce cost of construction to the lowest possible limit compatible with excellence of the finished article, and rightly believing that consecutive operations may be more perfectly and rapidly carried on by mechanical, than by manual means. A man of quick perceptions, he has lost no opportunity of adding such improvements to the "Case" machinery as experience dictated would simplify its construction, increase the perfection of its operation, place it more readily under the control of the miller, and render more accurate its features of adjustability. During the past year THE MILLING WORLD has, in its department of "New Inventions," illustrated and described a considerable number of patents taken out by Mr. Case for improvements in roller mills, centrifugal reels, etc., and our readers may remember that in a recent issue of this journal it was stated that a strong probability existed of suits being instituted under several patents owned by the company for infringement upon features of high value in their estimation.

It is our present intention to very briefly describe and illustrate twelve different inventions of Mr. Case, for which letters patent were granted him April 29, 1884, and in which we believe our readers may find something to interest them, and referring to Fig. 1.

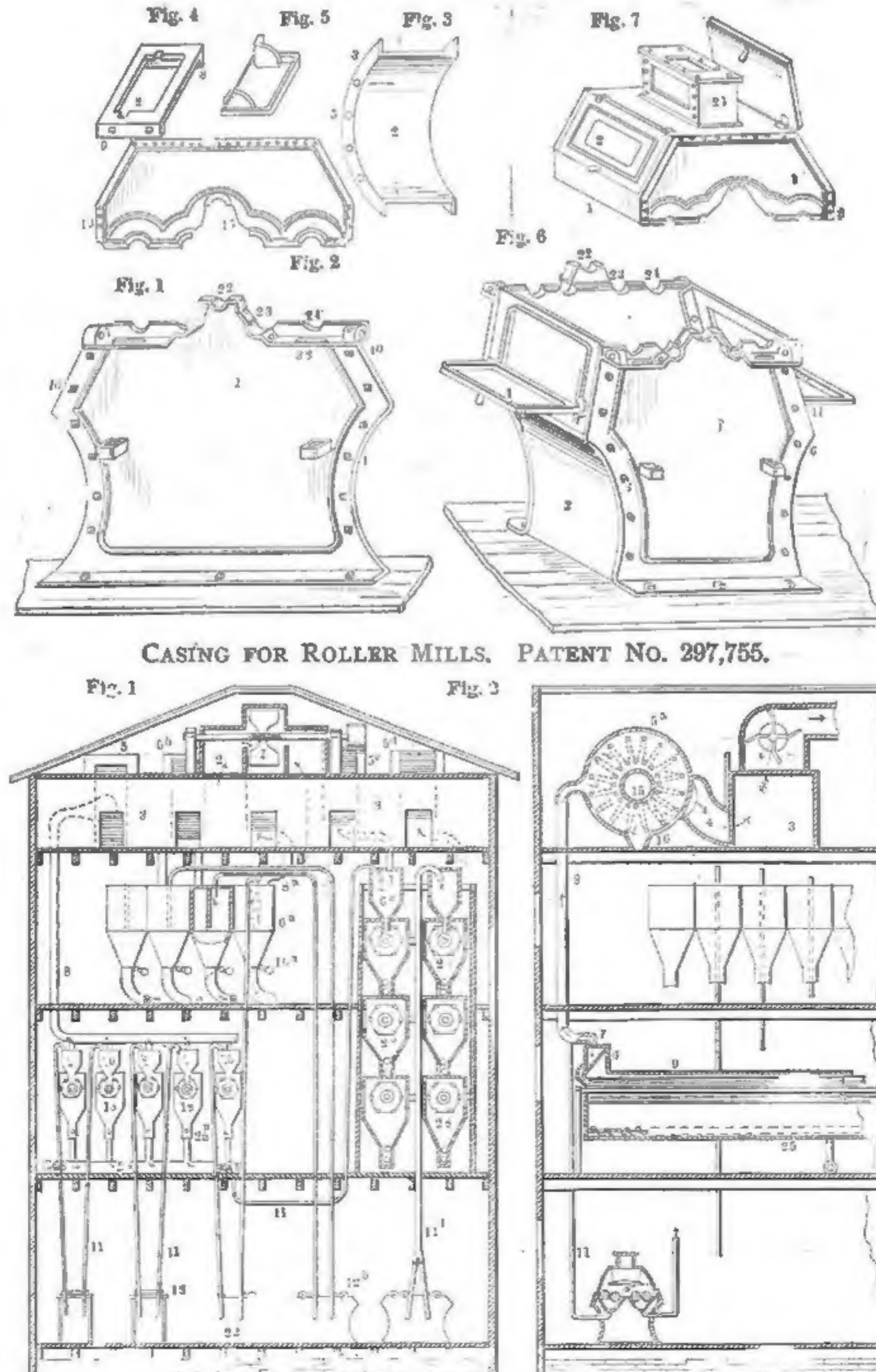
The first invention is a Feed-Box for Roller Mills, the object of which is to provide a box which will cause a uniform and even quantity of material to be fed to the rolls from end to end. Fig. 1 is a vertical section of a four-roller mill, showing feed-box in position. Fig. II is a perspective view of said box, and Fig. III is a transverse section thereof, showing the cam-shaft for operating it in elevation. The box is suspended over the rolls by means of flexible hangers,



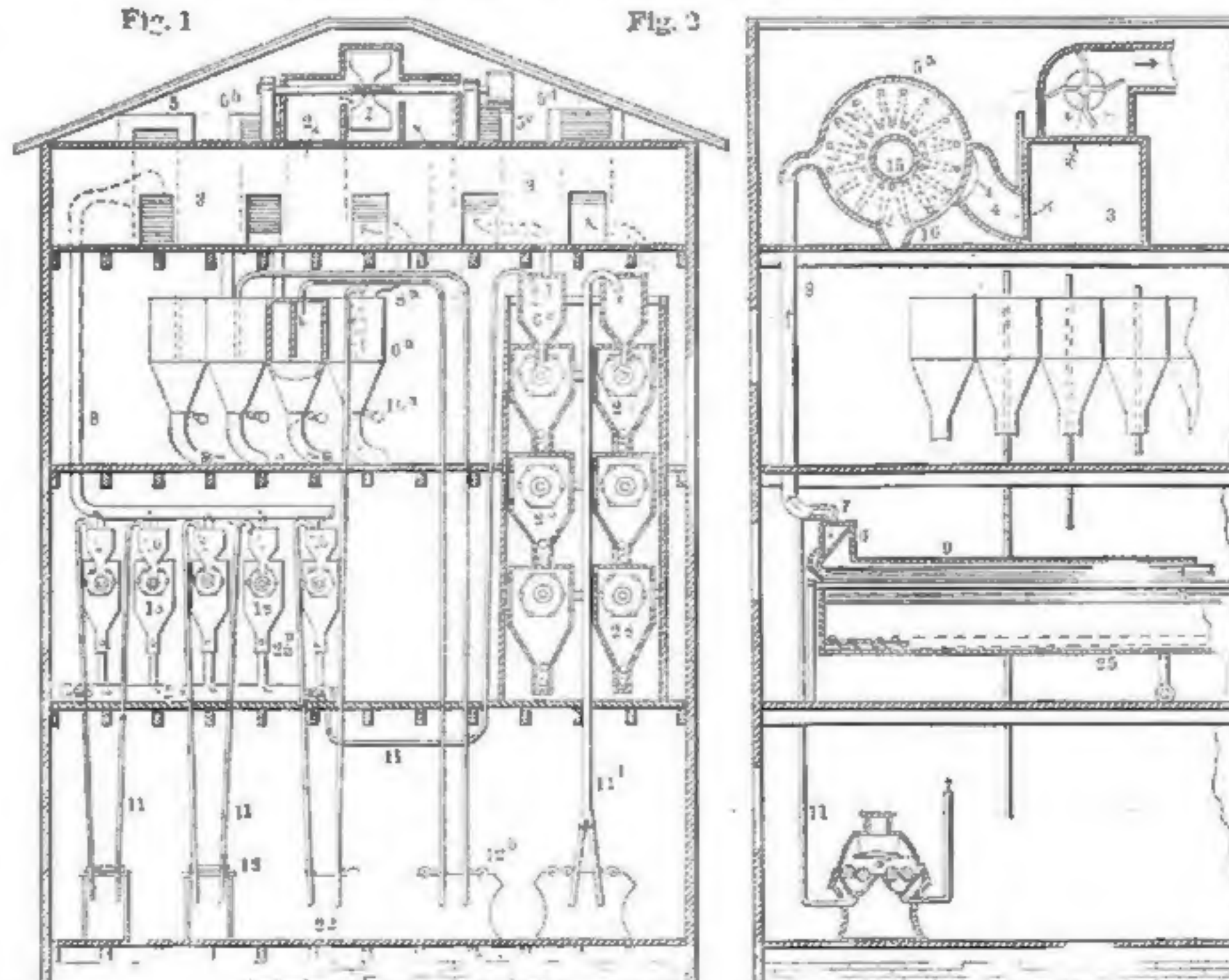
FEED-BOX FOR ROLLER MILLS. PATENT NO. 297,754.



FEED-BOX FOR ROLLER MILLS. PATENT NO. 297,764.



CASING FOR ROLLER MILLS. PATENT NO. 297,755.



APPARATUS FOR MANUFACTURING FLOUR. PATENT NO. 297,757.

which are preferably arranged as shown in Fig. II, one at each corner. The floor of the box is preferably formed sloping toward the edge, and provided with shallow bridges over which the material sifts in equal and uniform quantities during the alternate motions of the box. As represented in Fig. II, these front boards are preferably corrugated and secured adjustably to the feed-box by screws, which are driven into said box, and work in vertical slots in the front boards, their heads being made to impinge with any necessary friction against the faces of said boards. The number of this patent is 297,754.

Although out of its order numerically, our second illustration is also of a Feed-Box for Roller Mills, and is a modification of the first, the improvement consisting essentially in suspending the box from the top of the machine by elastic straps or spring hangers, which are preferably formed of steel springs, one end of each of which is fastened to a corner of the box, and the other coiled and attached to suitable fixed parts of the frame, the springs on the opposite sides of the box being coiled in opposite directions, so as to keep it normally in a central position. Fig. 2 is a perspective view of improved feed-box removed. Fig. 3 is a side elevation of the complete machine, showing the means for adjusting the rolls. Fig. 4 is a perspective view of the lower section of the journal box of the movable roll. Fig. 5 is a longitudinal section of the link for regulating the distance asunder of the rolls. The number of this patent is 297,764.

The third illustration represents his Casing for Roller Mills, which is constructed in parts, but so arranged that it may be quickly bolted together, forming a solid iron frame. Concerning this Mr. Case says: I construct two sides, which are absolute duplicates of each other. With these sides are cast the lower sections of the bearings for the stationary rolls. I also cast a curved end piece having flanges for the securing-bolts, which end piece can be used on either end of the machine. I also cast an end piece into which the door is hinged, and from these three pieces or castings duplicated I form the lower part of the casing or frame. The frame is put together by passing bolts through holes in the side of the frame, which engage with the flanges on the circular pieces and with the end piece which holds the frame together. The holes for admitting these bolts are cast in, so that it is a small amount of labor to set the frame up and bolt it together. When bolted together in this manner, it possesses all the advantages of a frame cast in one piece, while the cost in construction is less than one-half. The cap or top of the frame is constructed of two side pieces, which are absolute duplicates of each other, and have cast on their lower edges covers or housings for the journals which rest in the lower side pieces. The two sides are secured together by placing wooden connections between them and fastening them by means of ordinary wood screws. When this top or cap is screwed together, it is adapted to be dropped down over the frame, forming a neat and perfect covering over the top of the rolls and journals. In the drawing, Figure 1 is a perspective view of one of the duplicate sides of the frame. Fig. 2 is an elevation of one of the duplicate sides of the cap or cover. Fig. 3 is a perspective view of one of the duplicate ends of the frame. Fig. 4 is a perspective view of one of the door-frames which surmount the end plates illustrated in Fig. 3. Fig. 5 is a perspective view of one of the doors. Fig. 6 is a perspective view of the main frame or casing bolted together in readiness for the reception of the roll-bearings and rolls, showing the doors of said casing open. Fig. 7 is a perspective view of the cap or cover in its complete condition, showing one of the doors thereof open. The number of this patent is 297,755.

The subject of the fourth patent is an Apparatus for Manufacturing Flour, and the invention consists in one or more fans, having sufficient capacity to supply the necessary air-currents for the elevation of all the material in the mill, said fan or fans being connected with suitable air-conduits, and communicate with suitable dust-catchers for the purpose of arresting any material which may be elevated beyond the settling-chambers. By this arrangement of the exhaust pipes and dust catchers, Mr. Case claims to remove

a very large portion of the fine fibre and impure material which become incorporated with the chop in the process of reduction and grinding, and says: This material from the dust-catchers is sent to separate bolts, and treated separately and manufactured into a lower grade of flour. I also cause the air-currents for elevating to be drawn through the rolls or reduction-machines in such a manner as to keep them perfectly cool. In the invention I construct a series of settling-chambers, which communicate with a series of bolts, the settling-chambers being also connected with a series of dust-catchers. This series of dust-catchers is connected by suitable pipes with valves to regulate the strength of current to the air-conduits, the suction being produced by fans. In the drawings, Fig. 1 is a vertical section on the line x, Fig. 2, of a mill embodying the improved system. Fig. 2 is a vertical section of the same on line y, Fig. 1. Number of this patent, 297,757.

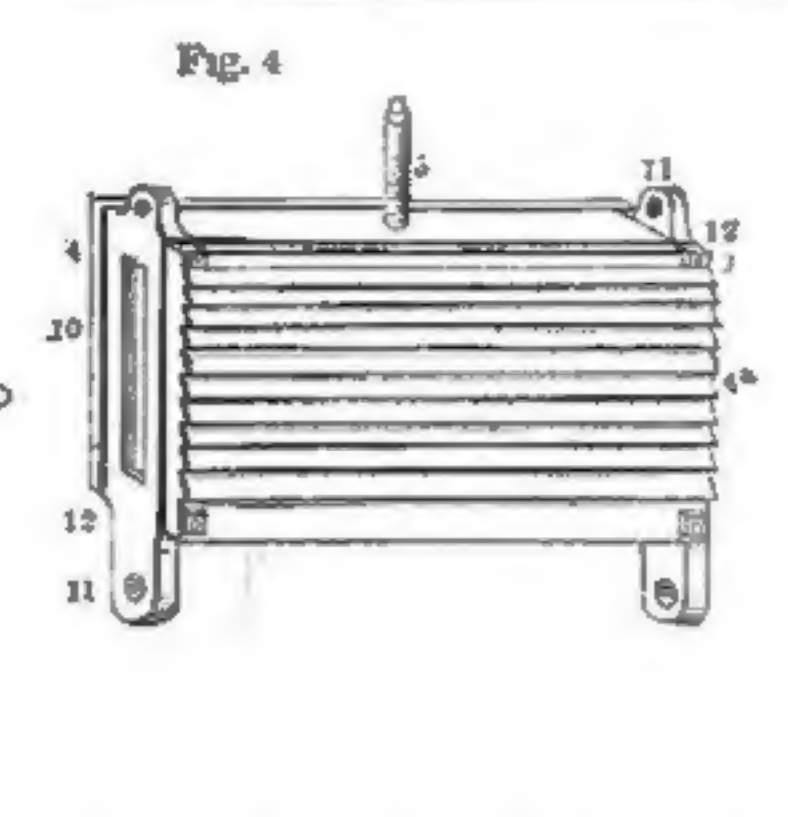
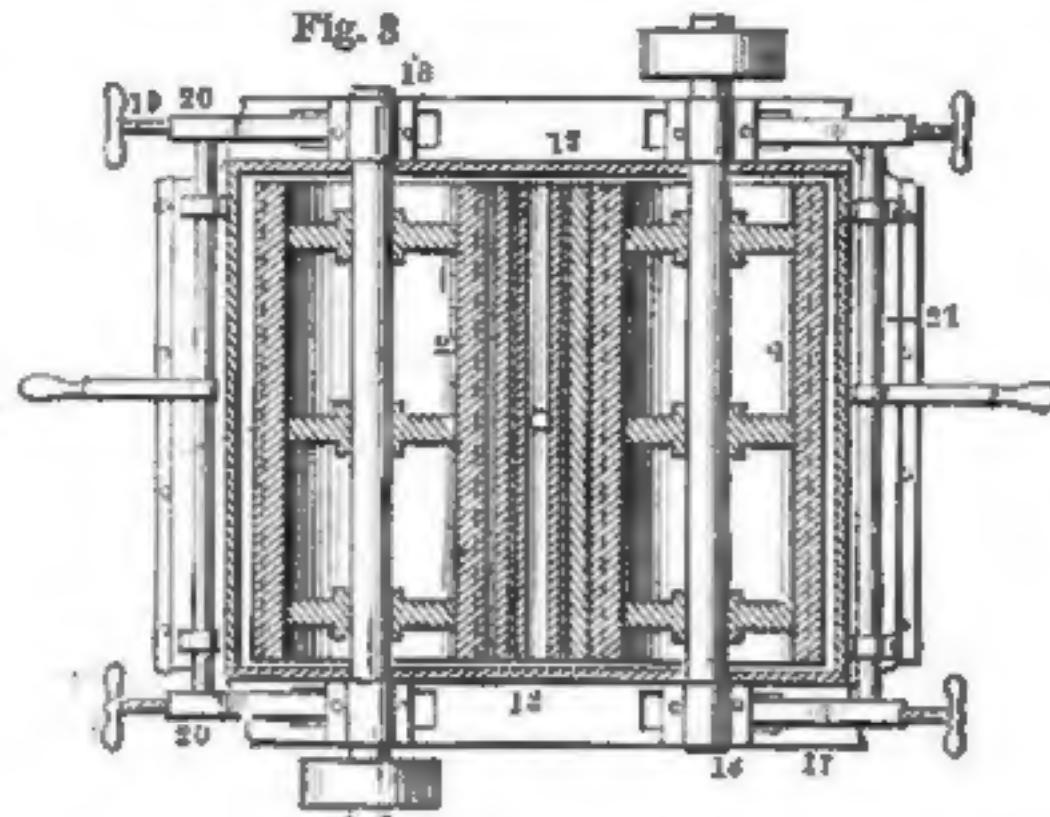
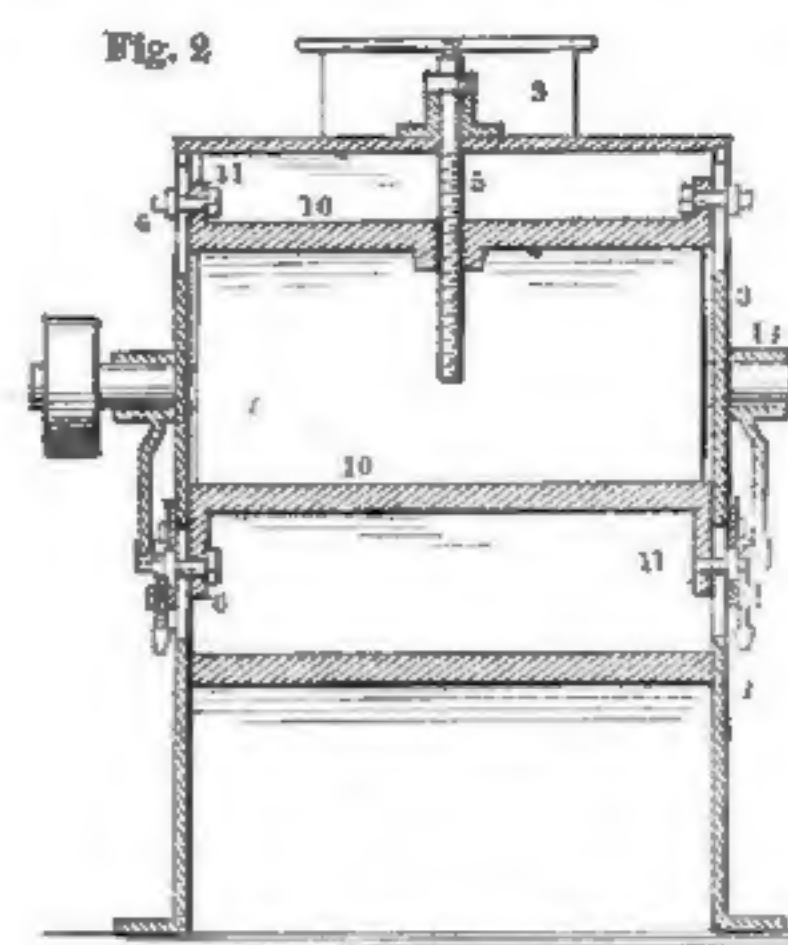
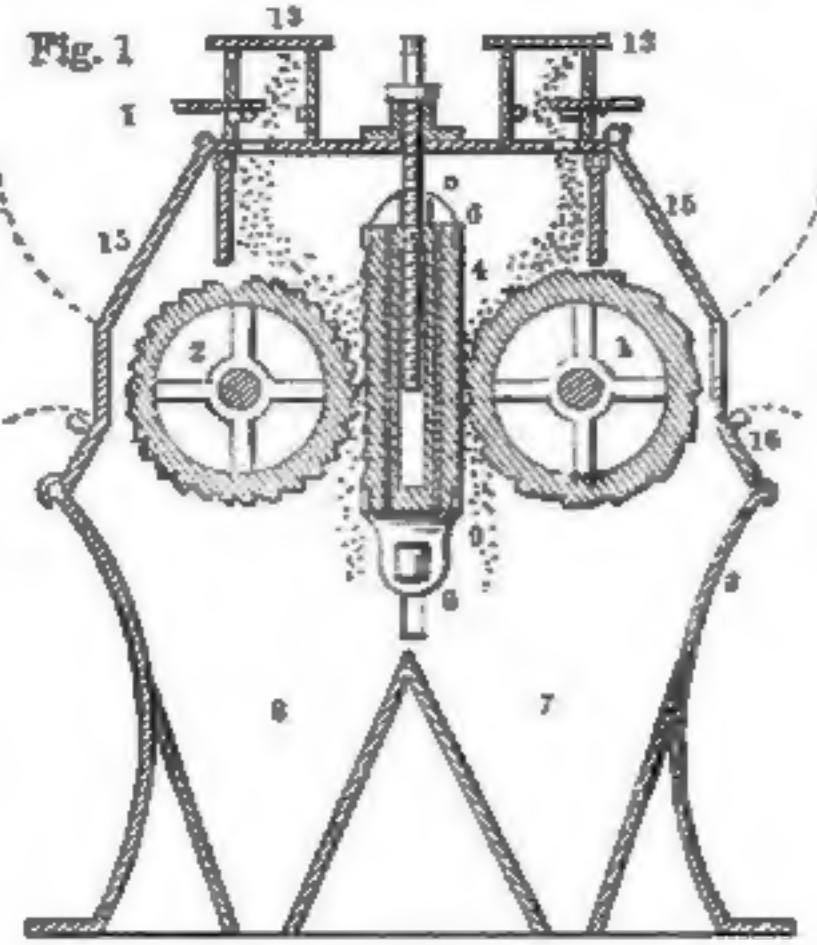
The subject of the fifth invention is a Grain Breaking or Reduction Machine constructed with a pair of revolving grinding-rolls working against the opposite faces of a stationary plate interposed between them. The plate is adjustable vertically by means of one or more screws, so as to bring the different parts of its surface into action between the rolls, and it is furthermore provided with clamp-bolts for securing it in any position in which it may be set. The interposed grinding-plate consists of a frame or back, to which are screwed surface-plates, which may be either smooth or corrugated. Between the surface-plates and the frame or back to which they are attached are interposed packings of rubber or like yielding material, to take up the jar and prevent noise. By extending the grinding-plate above and below the grinding-surfaces of the rolls, the machine is divided into two separate and distinct compartments, and thus a gradual-reduction machine which is adapted to act successively on the material is provided, suitable conveyors, elevators, and feed mechanism being employed. Figure 1 is a vertical transverse section of a machine illustrating the invention, on the line x x, Figs. 2 and 3. Fig. 2 is a horizontal section of the same on the line z z, Figs. 1 and 3. Fig. 3 is a vertical longitudinal section on the line 3 3, Figs. 1 and 2. Fig. 4 is a perspective view of the interposed grinding-plate removed. The number of this patent is 297,756.

The sixth invention is an "Atmospheric Elevator for Flour-Bolts," and is one of a series used in his improved system of atmospheric elevation in flour mills before referred to. It consists in a rotary bolt or a series of bolts which are supplied with material from an air-pipe or series of air-pipes communicating with settling-chambers. In this machine the material is elevated to the hopper and subjected to the purifying blast of air, which relieves it of its dust and impurities before it is delivered to the bolt. In the accompanying drawings, Figure 1 is a vertical section on the line x x, Fig. 2, showing the settling-chamber, fan, air-partitions, bolt, and conveyor. Fig. 2 is a vertical transverse section of the same on the line z z, Fig. 1. Fig. 3 represents a modification, in which separate double conveyors are used under each bolt of the series, instead of a single conveyor common to all, as represented in Fig. 1. The number of this patent is 297,758.

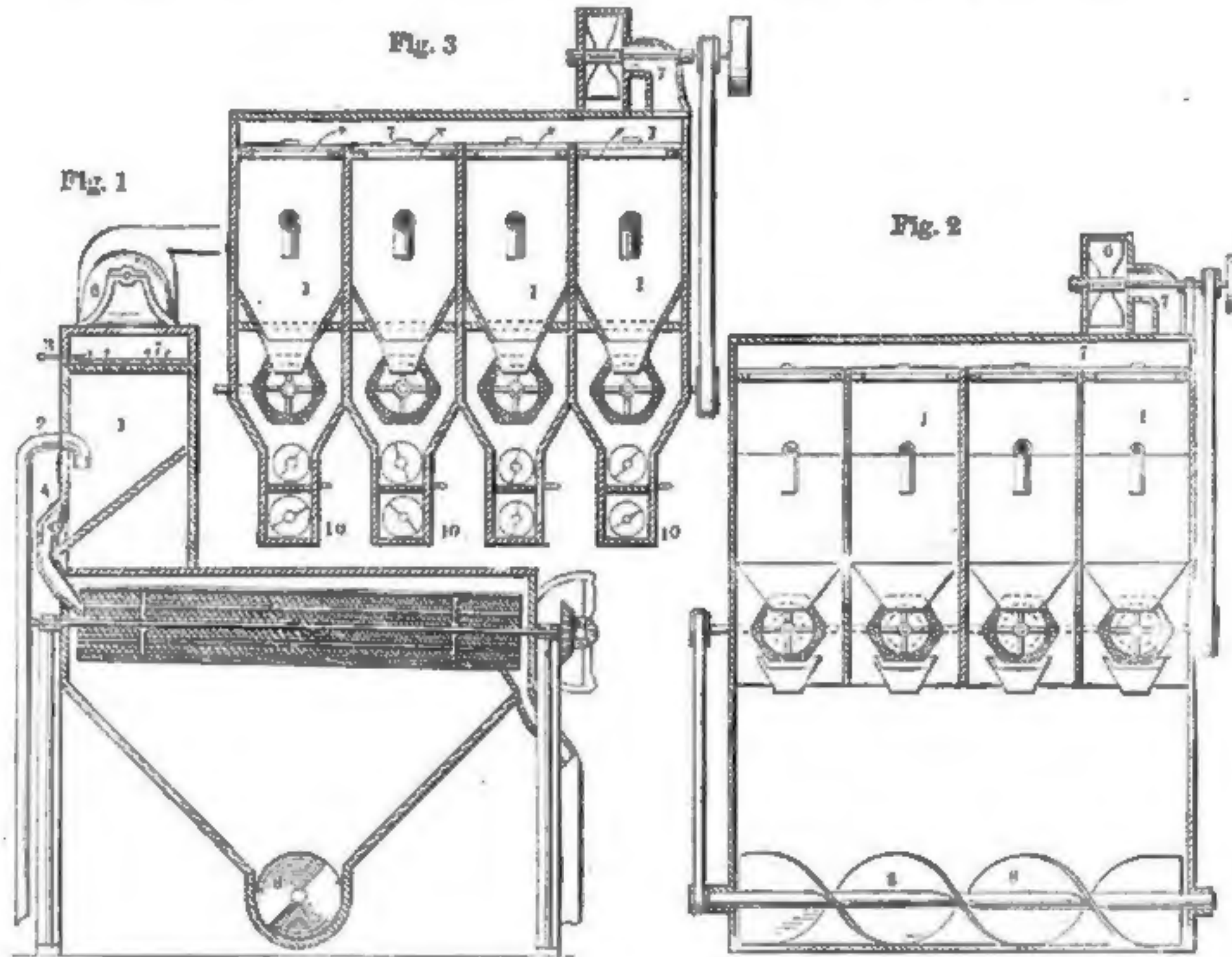
The subject of the seventh patent is a "Gradual-Reduction Machine for Milling" and it relates to that class of grain-reduction machines where a series of rolls are arranged in one common frame and combined in such a manner that the several reductions and separations of the material are made in one common machine. The machine is constructed with a series of vertical rolls corrugated in the usual manner and combined in one common frame. The frame containing the bearings of the rolls is constructed of iron. To this iron frame is bolted a wooden frame, to which are attached wooden boards for inclosing the screens. In this machine one shaking screen is used for each reduction, and also a return conveyor-board, which is so arranged as to cause the material, after being sifted, to be carried back to the next reduction. The several rolls are driven by one endless belt on each side of the machine, and the tightening device is so arranged that one common lever on each side of the machine operates a series of tightening-pulleys, and by a slight movement of the lever the belt may be loosened, so as to cause the machine to stop, or by tightening it the machine may be put in operation. The flow of the material over the screens and the return of the material after being sifted to the next rolls are accomplished by the use of reverse hangers, which are supported in disks or plates having circular slots, in such a manner that the stock may be caused to travel down the riddle and return with whatever degree of rapidity the miller may desire. In the accompanying drawings, Figure 1 is a vertical longitudinal section of the machine. Fig. 2 is a transverse section thereof of the line z z, Fig. 1. Fig. 3 is a transverse section on line 3 3, Fig. 1. The number of this patent is 297,759.

The subject of the eighth patent is a "Gradual-Reduction Machine for Manufacturing Flour" and has for its object the production of a simple, cheap, and efficient roller-mill which shall perform the several reductions necessary in gradual-re-

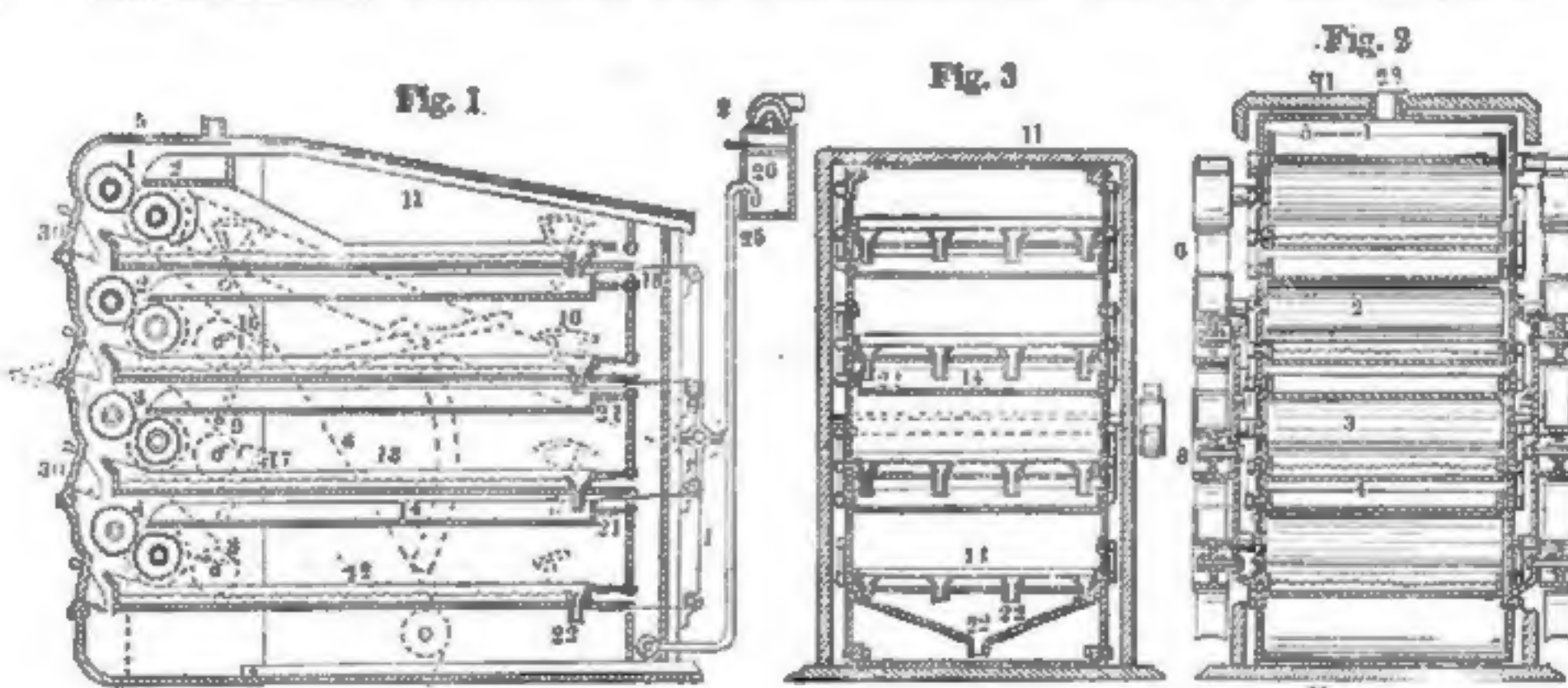
rolls which are corrugated in different degrees of fineness, the coarser corrugations receiving the grain for the first reduction, and the finer corrugations for the subsequent reductions. In my improved mill I use a frame having adjustments



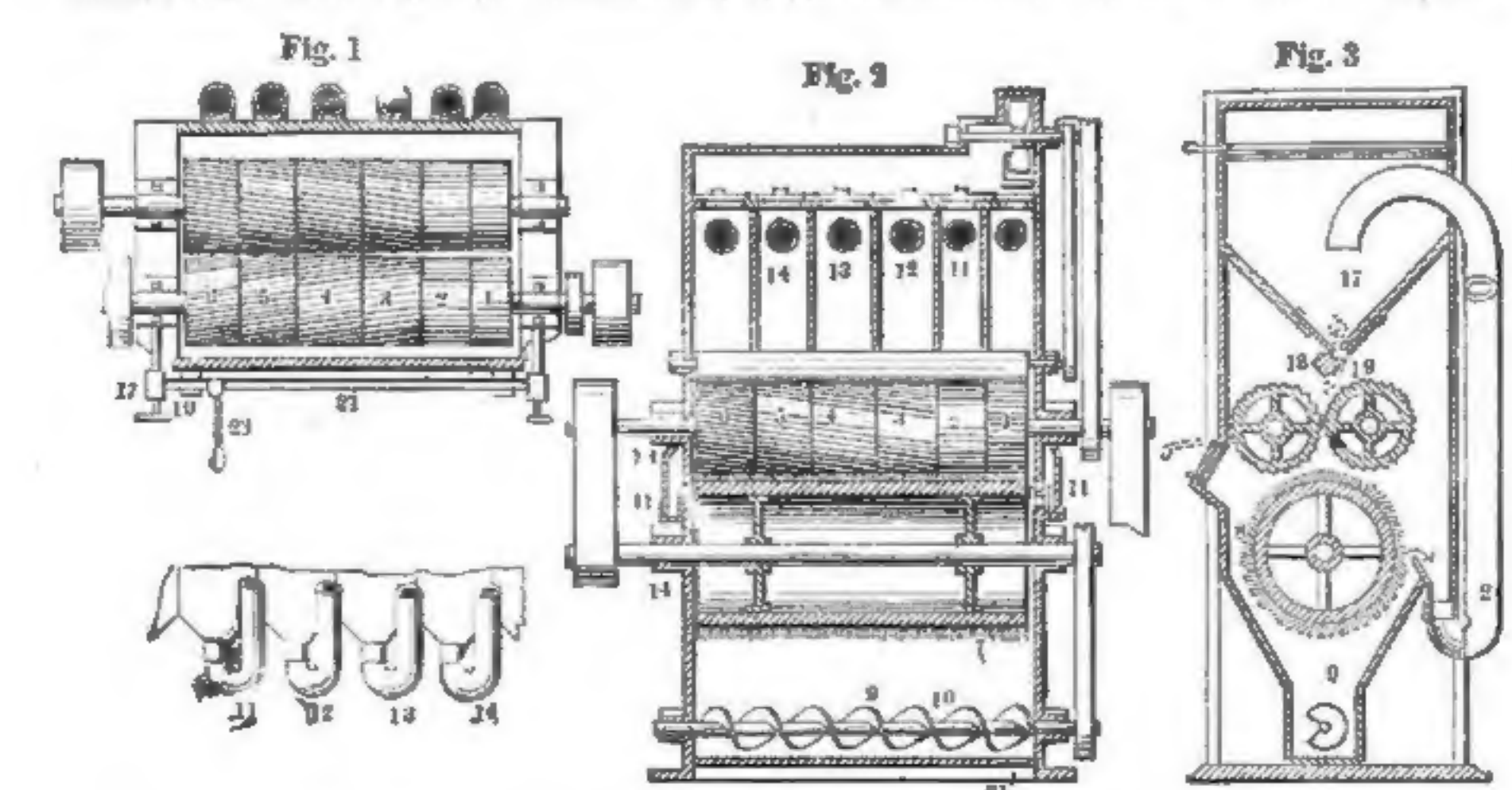
GRAIN BREAKING OR REDUCTION MACHINE. PATENT NO. 297,756.



ATMOSPHERIC ELEVATOR FOR FLOUR-BOLTS. PATENT NO. 297,758.



GRADUAL REDUCTION MACHINE FOR MILLING. PATENT NO. 297,759.



GRADUAL REDUCTION MACHINE FOR MANUFACTURING FLOUR.

duction milling, all combined in one compact and simple machine, thus enabling the miller of small means to compete with roller-mills of the most improved construction. Mr. Case says: I construct my improved roller-mill with two parallel

for opening and closing the rolls, which are not represented in this application. In the accompanying drawings, Fig. 1 is a longitudinal section of the machine on the line x x, Fig. 3. Fig. 2 is a longitudinal section of the same on

the line z z, Fig. 3. Fig. 3 is a transverse section thereof on the line 3 3, Figs. 2 and 4. Fig. 4 is a detached perspective view of the delivery-hoppers and pneumatic elevating-pipes. The number of this patent is 297,760.

The subject of the ninth patent is a "Grain Reduction and Separating Machine" and this invention relates to an improved machine for splitting wheat and separating the germ and impure matter which may be confined within the crease of the wheat. It consists of a machine comprising devices for splitting the grain, and a compound reel constructed in such a manner that three separations may be made, the broken wheat passing off by one spout, the germ which has been removed from the grain by another spout, and the flour or seam impurities which may have been liberated by another spout. The reel employed for this purpose is double, being formed with an inner wire-cloth screen and a finer outer screen of bolting-cloth, and the reel and cracking devices are both mounted in the same frame and driven by the same connections. In the accompanying drawings, Figure 1 is a front view of the apparatus. Fig. 2 is a vertical longitudinal section, showing the breaking and separating mechanism more fully. The number of this patent is 297,761.

The subject of the tenth patent is a "Process of Reducing Grain to Middlings & Flour" and has for its object the separation of all the interior starch and glutinous parts of wheat from the bran and germ without materially abrading the bran. The wheat is first split through the seam by passing the same through a suitable machine made for that purpose. The second step is to remove the germ and crease impurities. The wheat thus prepared is sent to a pair of crushing-rolls, preferably smooth, and having a differential speed. Instead of paired rolls, a roll and plate or a pair of disks or plates, or other means may be used to effect the crushing of the grain without cutting; but the preferred device for this purpose consists of a pair of smooth rolls moving at different speeds. This product is now sent to a disintegrating or whipping machine constructed in a manner to produce great activity of the stock operated upon. This action may be produced by currents of air forcing the crushed grain against targets or any suitable machine; but it is preferred to employ the device constructed as follows: a rapidly-rotating shaft provided with two heads, connected together by wire beaters mounted eccentrically within a stationary cylinder, consisting of a wire screen, and also fixed percussion-points against which the material is thrown with great force, whereby all the material loosened from the bran by crushing is dislodged and separated therefrom by means of the wire screen. The materials, passing over the tail of this reel, are sent back to another crushing-roll, and then to another disintegrating-machine, as above explained. This series of crushing and whipping actions may be extended to two, three, four, or more operations; but if the disintegrating-machine is run at too high speed, and the machines are not loaded beyond their capacity, the flour-producing material may be completely separated from the bran at three operations. After the flour producing parts have been completely separated from the bran and germ, the product thus obtained, is sent to ordinary bolting-reels, where it is treated in the usual manner. In the drawings Figure I is a vertical longitudinal section of a machine which may be employed for effecting the first two steps of the process. Fig. II is a vertical section of a machine which may be used for one or more reductions of the product. Fig. III is a vertical transverse section of one of the machines which may be used for disintegrating and separating the product after each reduction. The number of this patent is 297,762.

The subject of the eleventh patent is a "Disintegrating and Separating Machine," and has for its object the production of a complete and successful disintegrating and separating machine for use in "gradual-reduction" milling. This machine is constructed with a reel made of longitudinal bars or beaters and a casing, within which the said reel is revolved at a high velocity, the casing being provided with a series of inwardly-projecting studs, against which the material is thrown by the rotation of the reel with forcible percussive action, and with screens through which the material will pass when sufficiently comminuted. While the machine may be made to effect a complete and perfect separation of the bran from the interior of the wheat-berry, yet this action is greatly facilitated in combination with crushing-rolls. It may be used as well in the reduction of middlings to flour as in the reduction of wheat to middlings, as it combines the principles of reduction by percussive action with a sifting arrangement, whereby the particles reduced are discharged as soon as they are reduced to the size of the meshes of the cloth which surrounds the the beaters. In the accompanying drawings, Figure 1 is a vertical transverse



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THE RECENT FAILURES.

THE reports of failures of large firms have come in thick and fast, during the past week, and nobody can tell at the present time where this will end, for a failure in one large firm generally carries with it the failure of many smaller merchants. Now if we attempt to analyze the cause of these disasters, we can express all in one word: "Speculation." If a man stakes his property on cards or at a faro table, he is called a gambler, an immoral, vicious man any thing but a respectable member of society; and if he loses everything he possesses, why, everybody "told him so;" it is all his own fault, and nobody feels himself called upon to extend the smallest amount of compassion to the unfortunate loser. But, when we find men gambled—no, beg pardon, *speculating* in stocks, staking not only their own, but also that which has been intrusted to them by others, on the rise or fall of certain values, and find that such men have failed heavily, inflicting untold misery upon numbers of people, we all feel pity for the poor unfortunate man, so rich yesterday and so poor to-day, and we feel like rendering all possible aid to the broken-down banker who managed to defraud perhaps hundreds of trusting people of everything they possessed. We seldom stop to think that the latest outgrowth of gambling, so-called "speculation" is the main cause of large failures. Lured on by the example of a few great speculators who managed to accumulate untold riches, such modern gamblers are led to destruction. Not that they speculate with the intention of losing their money; O no, they all believe that things will turn in their favor; and after the first loss, the second deal is supposed to make up for all, and like the common gambler, the speculator stands before empty purses and valueless bank accounts before he thinks of it.

Although we find among such professional speculators, men of the highest social standing, the fact remains nevertheless, that speculation does not recognize any code of morals; if one man can, by some trick or other, cause a flurry in the market, he may make millions himself, but others lose just as much, for the profits must be counter-balanced somewhere by corresponding losses.

If such heavy bank failures did not always re-act upon numbers of small merchants, we could afford to pass them in silence; but they generally entail failures of many, who, for numbers of years have perhaps, by careful legitimate business management, accumulated sums of money which were deposited in such banks. And for these men there is no law; if the bank failed they have to be satisfied and take what is left; such prospects are anything but encouraging. At the same time this kind of gambling, recognized as an honorable profession and short road to wealth, has permeated society at present, to such an extent, that nothing can be done to eradicate it, unless it be by beginning to teach the evil results of speculation to our boys, as an incidental lesson in political economy, in the hope that, growing up with such knowledge, they may perhaps do better when called upon to manage a business themselves.

How strange that in this year of grace, 1884, we yet find many, otherwise intelligent, people who attach special importance to the "Friday," and who firmly believe that great evils always occur on that day. This is well illustrated by the reported statements of New York bankers, who said last Thursday, that Friday was the day to be afraid of, because every great disaster had overtaken the markets on that day. Now certainly this is sheer nonsense. According to what laws that regulate the universe, should Friday have any influence upon disasters? In our eminently practical age we are not satisfied to have this and that simply stated, we want to know the reason why. But the Friday, the hangman's day, is regarded as a day of ill omen by many members of all classes of society. Men will not start on a journey on Friday; important business transactions must not occur; vessels must not leave port; bad weather is sure to come on that day if it come at all, etc., etc. It is a very plain case of how long old superstitions will linger in the minds of people, and how strong an effort is required by many well educated men to break through the thralldom of erroneous and false ideas acquired during childhood. How many parents or teachers stop to think that statements impressed upon the minds of children as facts, are liable to remain all through life; even if the adult in later years can see the fallacy of them, there is generally a more or less faint suspicion of the probability that the fallacy may be a fact after all, and it remains as a superstition, and sensible intelligent men run the danger of being ridiculed, because they are unable to divest their minds from the errors committed to the memory of the child. Being of an investigating turn of mind, we once undertook to watch and note the changes of the weather, which are said to occur always on Friday. Well, we watched faithfully for about six months, and sure enough, changes did occur every Friday as regularly as clock work. There it was, personal experience demonstrating conclusively and satisfactorily, that the old legend was based upon fact. But scientific inquiry is not satisfied with such one-sided experiment. So another series of observations were made for Thursday, for Saturday, in fact, for every other day of the week, and the result—was the same as for Friday. Changes occurred one day as much as they did any other day, Friday not excepted. In fact, it is well known that the weather

changes almost constantly, and is hardly ever stationary enough that small changes could not be detected. The difficulty is, that people who have been led to regard the Friday with special awe and fear, naturally take notice of any even slight occurrences on that day, which would have escaped their observation at any other time. So it is with every circumstance which we want to bring into relation with certain days and dates, and if everybody would take the trouble to look into the statistics of financial failures, he will undoubtedly find that Friday's average is no larger than that of any other day, certainly not large enough, allowing for fluctuations either way, to establish a law on these numbers.

DELIVER us from our friends. We thought that the tariff bills and tariff discussions were at an end, at least for this session of congress, and our well developed bump of appreciation was gently stimulated into a pleasurable feeling of anticipated rest at the prospect of our ability to see the papers, daily, weekly, and monthly, overflowing with something else than learned (?) effusions about protectionists and free traders. But, alas, we are doomed to disappointments all through life, and our future prospects of tranquility are doomed to another disturbance, for we are told that a few more of the people's so-called representatives are ready with other bills to the same effect, and such being the case, where is our anticipated rest? Echo answers "Where?" That reminds us very forcibly of what Herbert Spencer says in the last number of the *Popular Science* monthly about law-making: The mischief wrought by uninstructed law-making is vast in amount as compared with that caused by uninstructed medical treatment. Century after century statesmen have enacted usury laws which made worse the condition of the debtor. Of kindred nature was the measure which, in 1315, to diminish the pressure of the famine, prescribed the price of foods from the markets. Of like spirit and followed by allied mischiefs have been the endeavors to fix wages, which began with the statute of labor under Edward III, and ceased only sixty years ago, when having galvanized in Spitalfields a decaying industry the government finally gave up fixing silk-weavers' earnings by magisterial order. The interferences with the law of supply and demand, which a generation ago were admitted to be habitually mischievous, are now being daily made in other fields; and they are in these fields increasing the evils to be cured, and producing new ones, as much as of old they did in fields no longer intruded upon. Uninstructed legislators have in past times continually increased human suffering in their endeavors to mitigate it; and if these evils be multiplied by ten or more, a conception will be formed of the aggregate evils caused by lawmaking unguided by the study of social science.

WHILE we hear almost every day about additional wheat exporting countries, it is almost refreshing as a variety to hear that one country is destined to drop from the list in the near future, Denmark. Although it does grow as yet every year a surplus, we are told by a statistician of Copenhagen, Prof. Scharling, the rapidly increasing population and the steady growth of wealth, will, in a short time, allow the purchase of wheat from other countries at cheaper prices than it can be cultivated at home. Dr. Scharling reminds his people that there is a close parallel to be drawn between the agricultural histories of Denmark and England. We all know that Great Britain has furnished the principal markets for the largest part of the foreign grown wheat, and yet only one century ago, she exported annually, 750,000 q. of grain, of which more than half was wheat. The exports of grain

from Denmark were reduced nearly one-half between 1874 and 1882, as compared with the preceding ten years. If everything should keep moving at the same rate, the professor argues that within another ten years, the grain export will have practically ceased, and by the end of this century, Denmark, like England at present, will have to import grains and flour.

COMPETITION in telegraphy seems to be progressing. Now another scheme is on foot for an additional Atlantic cable, which is to run across Iceland and Greenland from Thurso in Scotland to Gaspe harbor on the American continent. Of course, so far the thing is only a project, but who knows, but in the near future the cables will all be in full activity, especially when long distance telephoning has advanced sufficiently to allow conversation to be carried on between the two continents. Although electrical science is as yet in its infancy the progress made has, nevertheless, been enormous. Only about forty years ago the first telegraph line was built and at present there are about 1,000,000 miles of it, of which 250,000 miles are in the United States. Add to this what a London journal tells us that a gentleman desirous of obtaining information as to long distance telegraphing, was able to communicate with Calcutta, 7,000 miles away from London, and truly the progress has been wonderful, and there is no telling, at present, where it will stop.

By the time this issue reaches our readers, a rather unique convention will be in session in Chicago. For the purpose of organizing a National Industrial Congress, all those interested in the industries of the country have been invited to attend and consider the best means for furthering the development of the different branches of their respective professions. Undoubtedly Chicago will do her best to make her guests feel at home, and if no other good accrues from the convention, it will tend to bring the members into a closer relationship by personal acquaintance with each other, and by a direct interchange of ideas.

THE shipment of grain by lake is said to be lower than ever. We are told that the vessels at the disposal of grain merchants far exceed the demand in Chicago; numbers of ocean steamers at Montreal are willing to carry grain for the mere cost of handling it, and are unable to obtain any. Add to this the fact that the English shipping interests are so low that a large share of the capital invested does not pay two per cent. of interest, and we are inclined to think that the water transportation is at present a very unprofitable business and ship-building a poor investment.

THE Queen city of the Lakes, commonly called Buffalo, is busy with preparations to receive the American Society of Civil Engineers. We do not doubt a moment that every one of the guests will feel sorry to leave after they have staid here a week, and when the time arrives for them to say farewell, it will be with the conviction that our city is in every possible way, just the place to hold summer meetings.

JUST after our last form had gone to press last week, word reached us of the death of the wife of Mr. J. T. Walter, at her home at Easton, Pa. In this sad bereavement, Mr. Walter will have the sincere sympathy of a very wide circle of friends and acquaintances.

WE add to our exchange list, with much pleasure, *The American Grain and Provisions Journal* of New York City. It is a new paper, with many features to recommend it, and we have little doubt it will receive hearty and ample support.

ESTABLISHED 1856.

EUREKA GRAIN CLEANING MACHINERY | GENUINE DUFOUR BOLTING CLOTH

OVER 18,000 MACHINES IN USE.

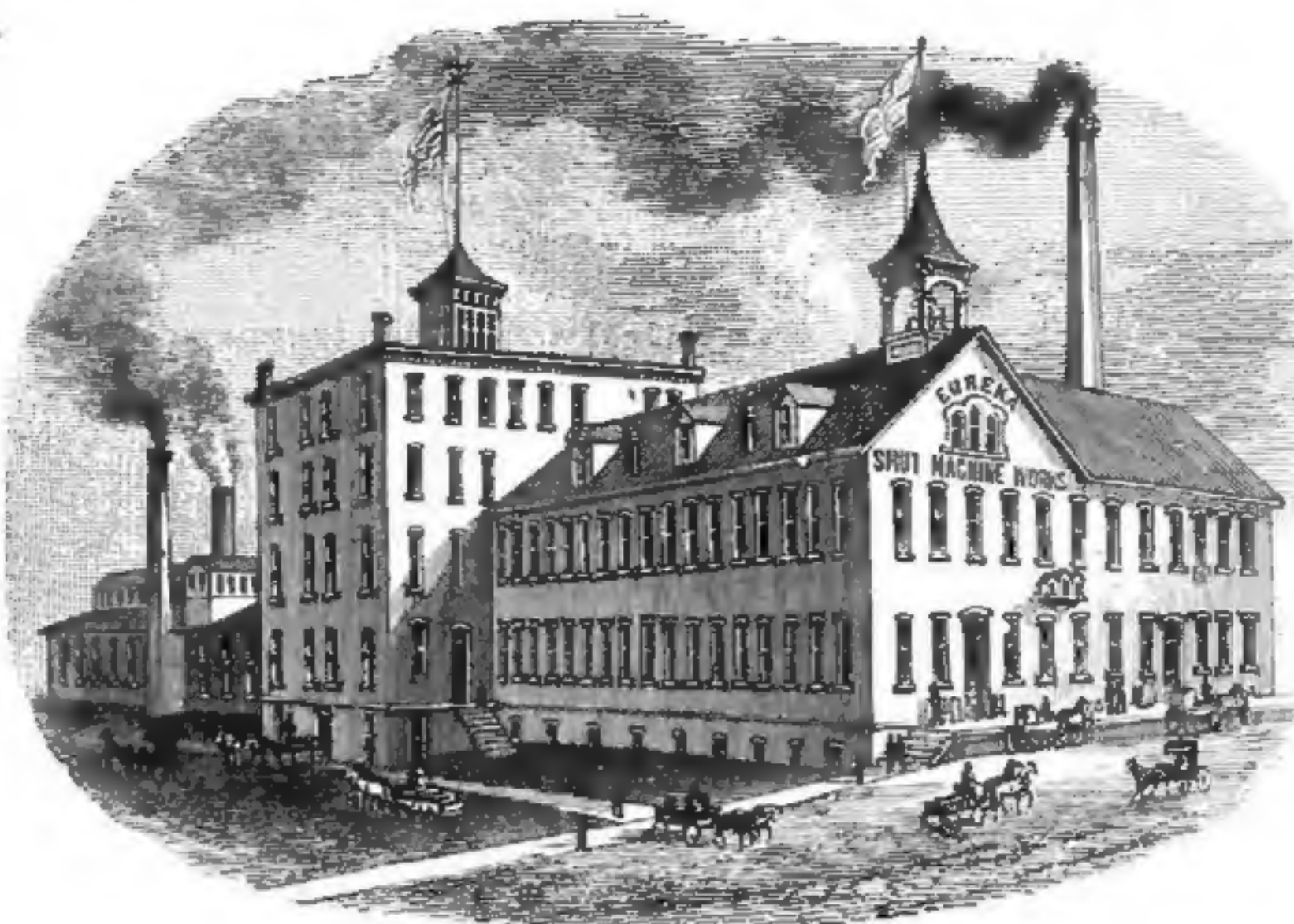
OUR LINE COMPRISES

The Eureka Separator,
The Eureka Smutter and Separator,
Eureka Brush Finisher,
The Eureka Magnetic Automatic Separator,
Silver Creek Flour Packer.

Our establishment is the oldest, the largest and most perfectly equipped of its class in the world, and our machinery is known and used in every country where wheat is made into flour.

HOWES & EWELL,
SILVER CREEK, N. Y.

European Warehouse and Office: 16 Mark Lane, London, E. C. England.
Gen. Agency for Australian Colonies and New Zealand.
Thos. Tyson, Melbourne, Victoria.



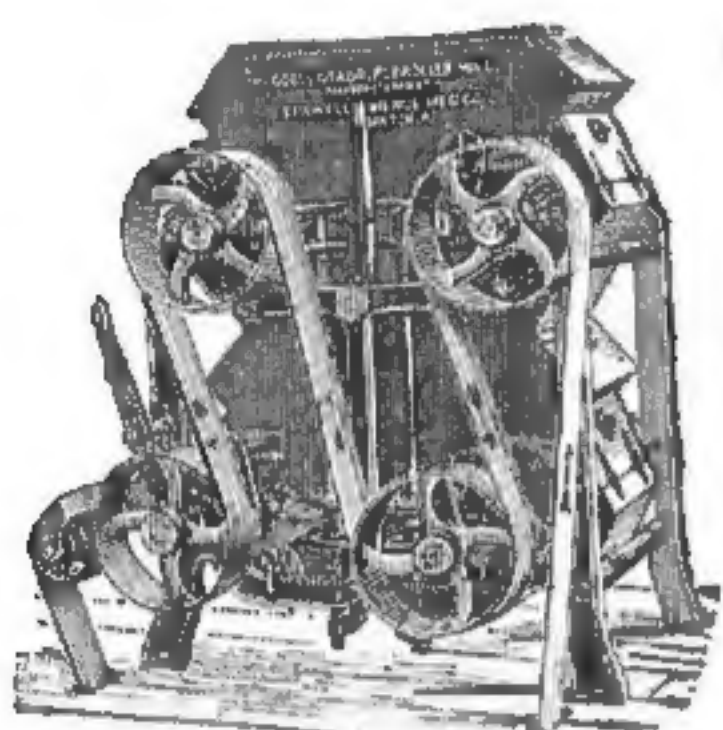
We handle this justly celebrated cloth in large quantities, and can fill all orders upon receipt. For such as may prefer a cheaper grade, we offer our

ANCHOR BRAND BOLTING CLOTH.

Guaranteeing it to be equal in every particular to any other cloth on the market, except the Dufour. We have handled it for years, have sold thousands of yards of it, and know it will fully sustain our representations.

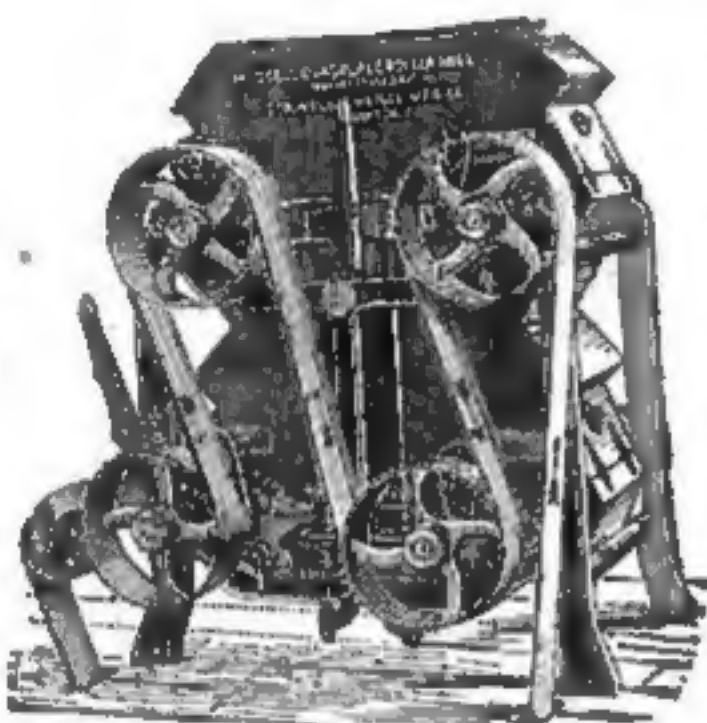
Send For Samples of Cloth, Our Style of Making Up, and Prices.

HOWES & EWELL,
SILVER CREEK, N. Y.

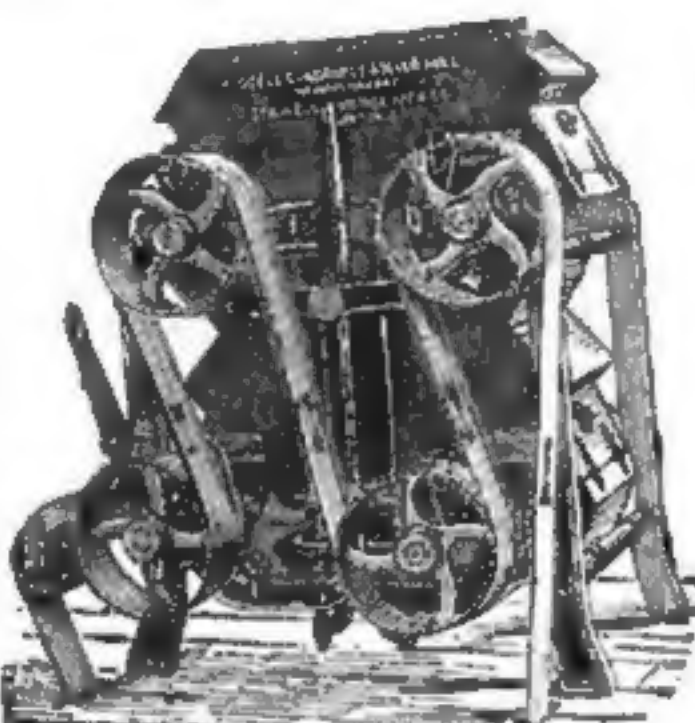
**THE ODELL ROLLER MILLS**

for every purpose and requirement, in every class of mill and for every measure of capacity, have demonstrated, not only

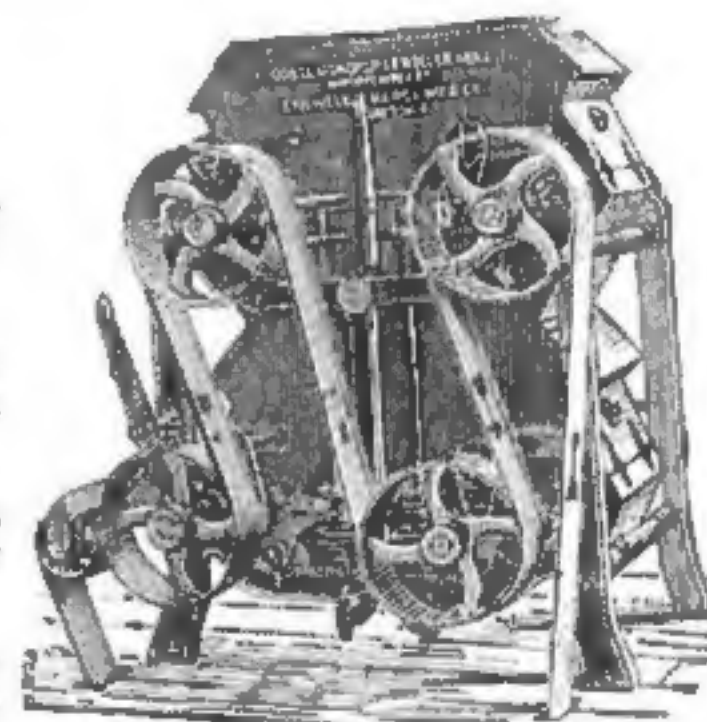
They are supplied with every desirable or necessary means



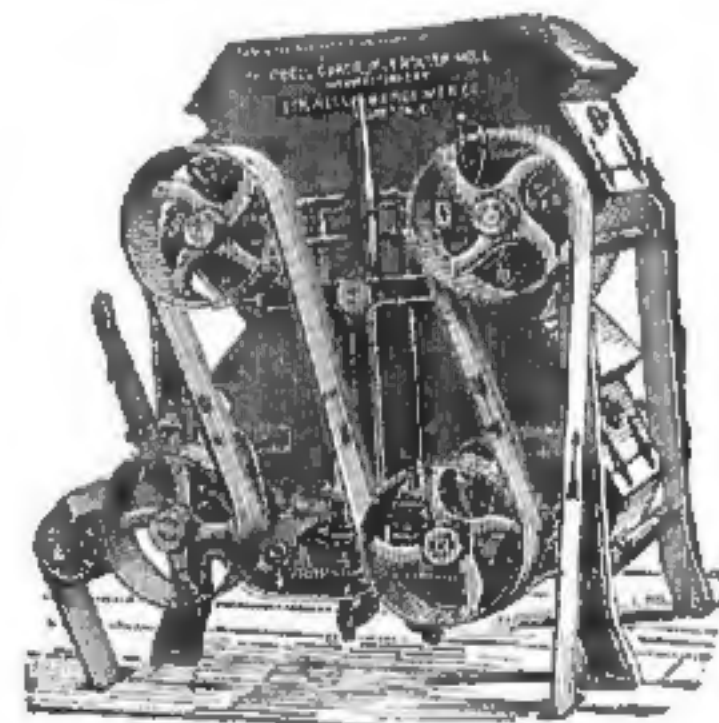
their entire fitness and adaptability, but their decided superiority over the numerous devices offered for similar purposes. Their conceded merit is their best advertisement and their ex-



tended sale evidences the high estimation in which they are held by the milling fraternity in every flour manufacturing district of

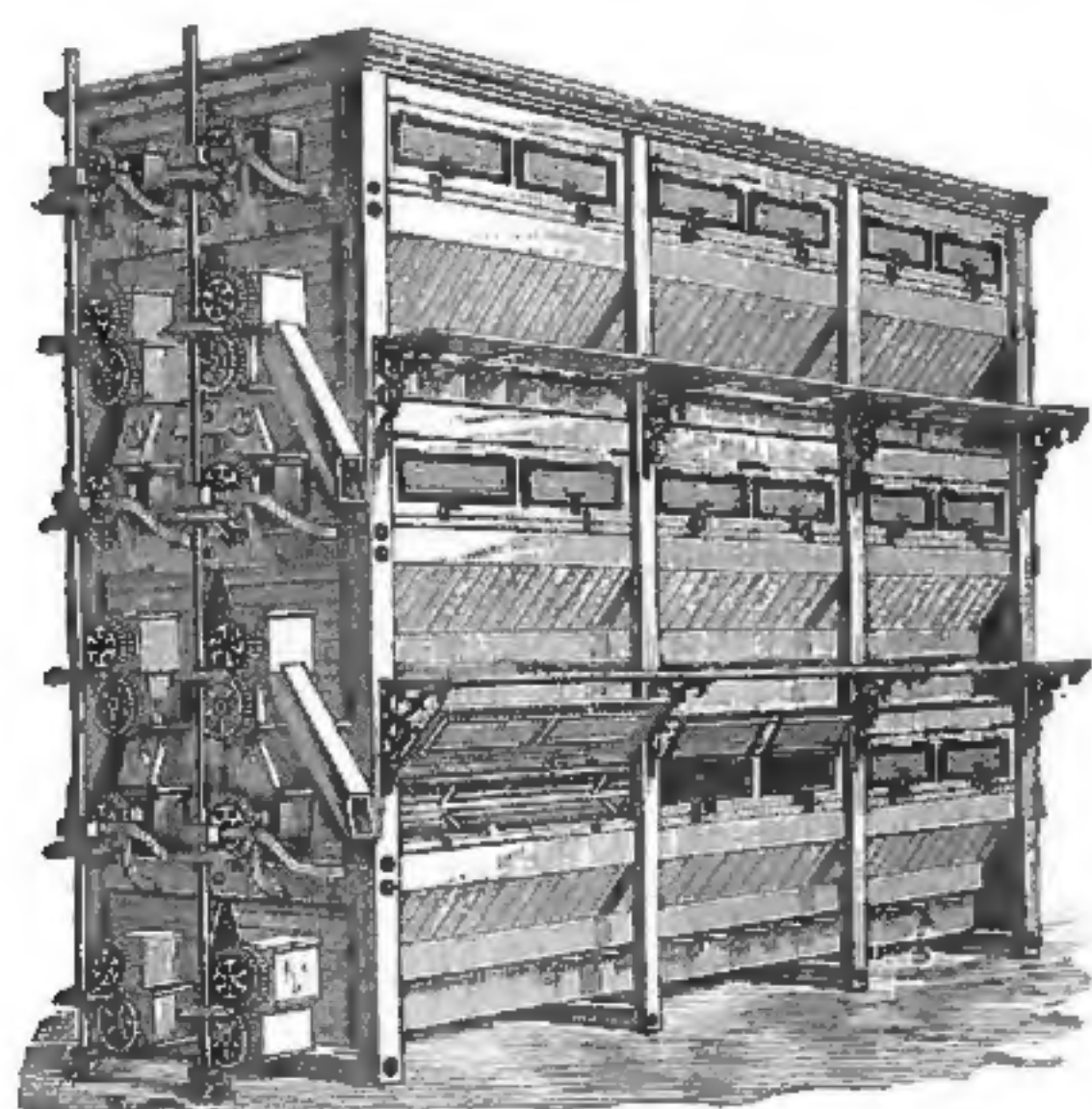


the country where they have been put to practical test.



for perfect and accurate adjustment; have rolls perfect in corrugation, and of absolute homogeneity in their hardened surfaces; the frames are remarkable for rigidity and strength, and finally they are built in various styles and sizes, expressly to meet the particular wants of every class of mill. We solicit correspondence from millers, confident of our ability to satisfactorily meet all their wants at a moderate expense.

STILWELL & BIERCE MFG. CO., DAYTON, OHIO.



**RICHMOND CITY
MILL WORKS,**

MANUFACTURERS OF AND DEALERS IN

**Impr'd Milling
MACHINERY**

AND

ALL KINDS MILL SUPPLIES

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SEND FOR CATALOGUE.

Cockle Separator Mfg. Co., Milwaukee, Wis.
GENERAL MILL FURNISHERS.

MANUFACTURERS OF Improved Kurth's Pat.

COCKLE SEPARATOR,

Built also in combination with

Richardson's Dustless

Wheat Separators.

Large Capacity Combined With

Good Quality of Work.

Beardslee's Patent**GRAIN CLEANERS**

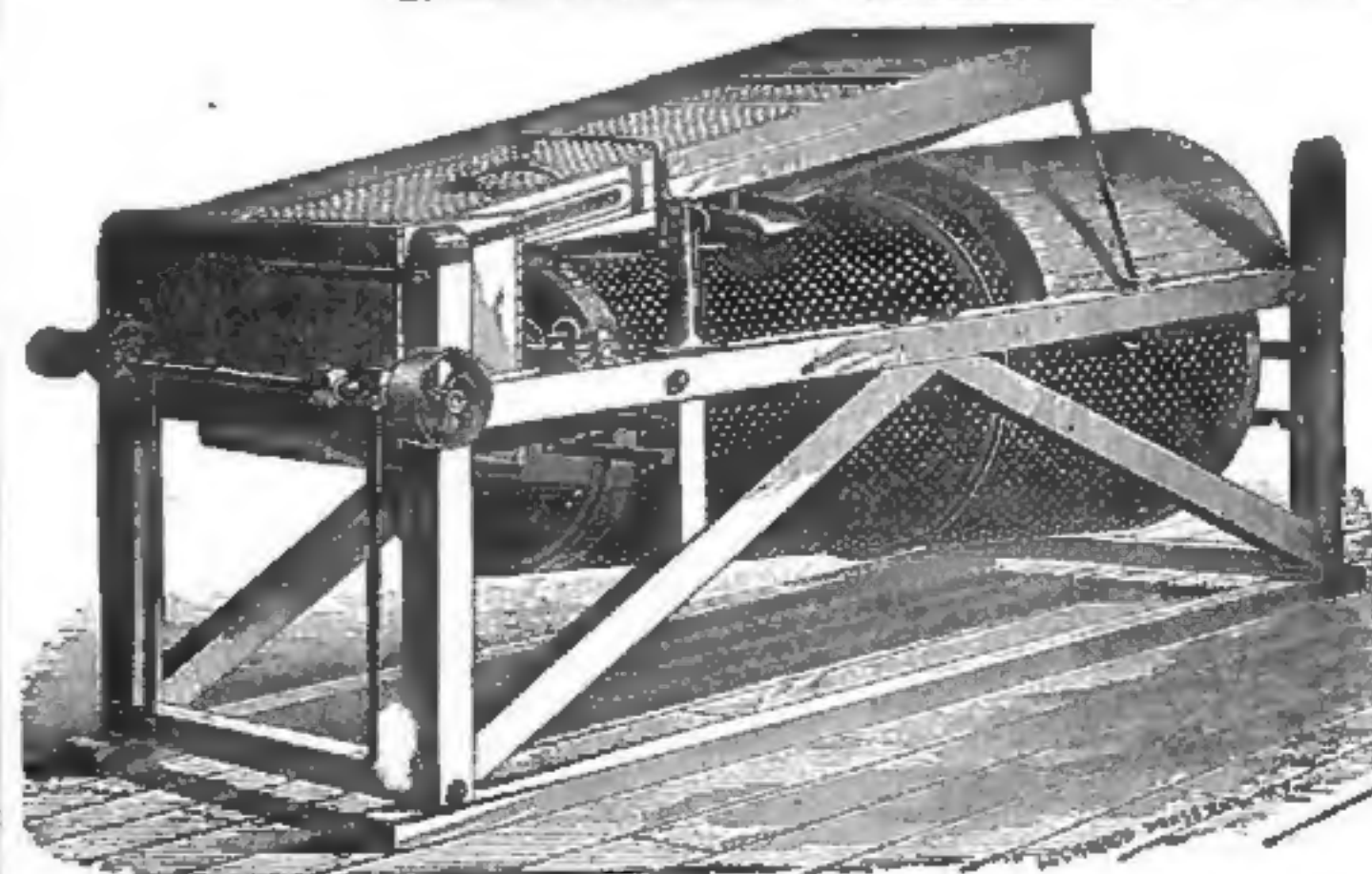
Fully Guaranteed to Give the Best

of Satisfaction.

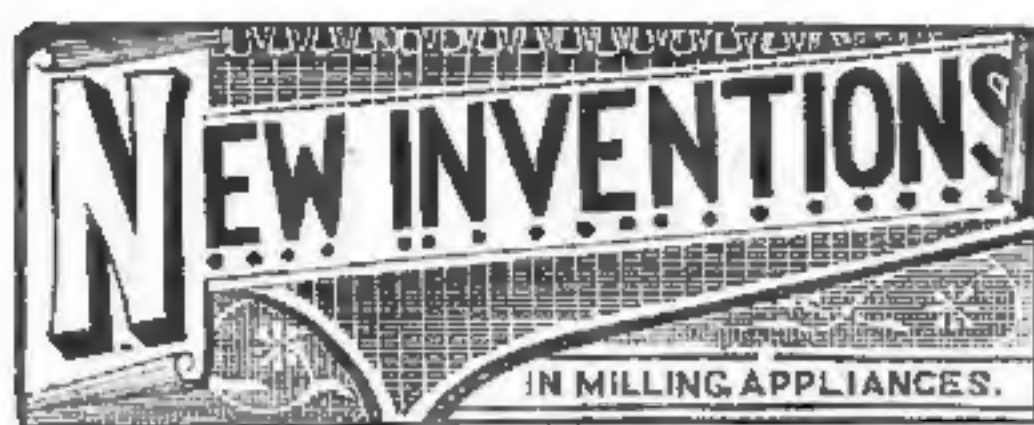
Pott's Pat. **Automatic Feeder**

for Roller Mills, Purifiers, etc.,

very Simple and Cheap.

Perforated Sheet Metals**AT LOW PRICES.**

Send for Circulars and Catalogues.

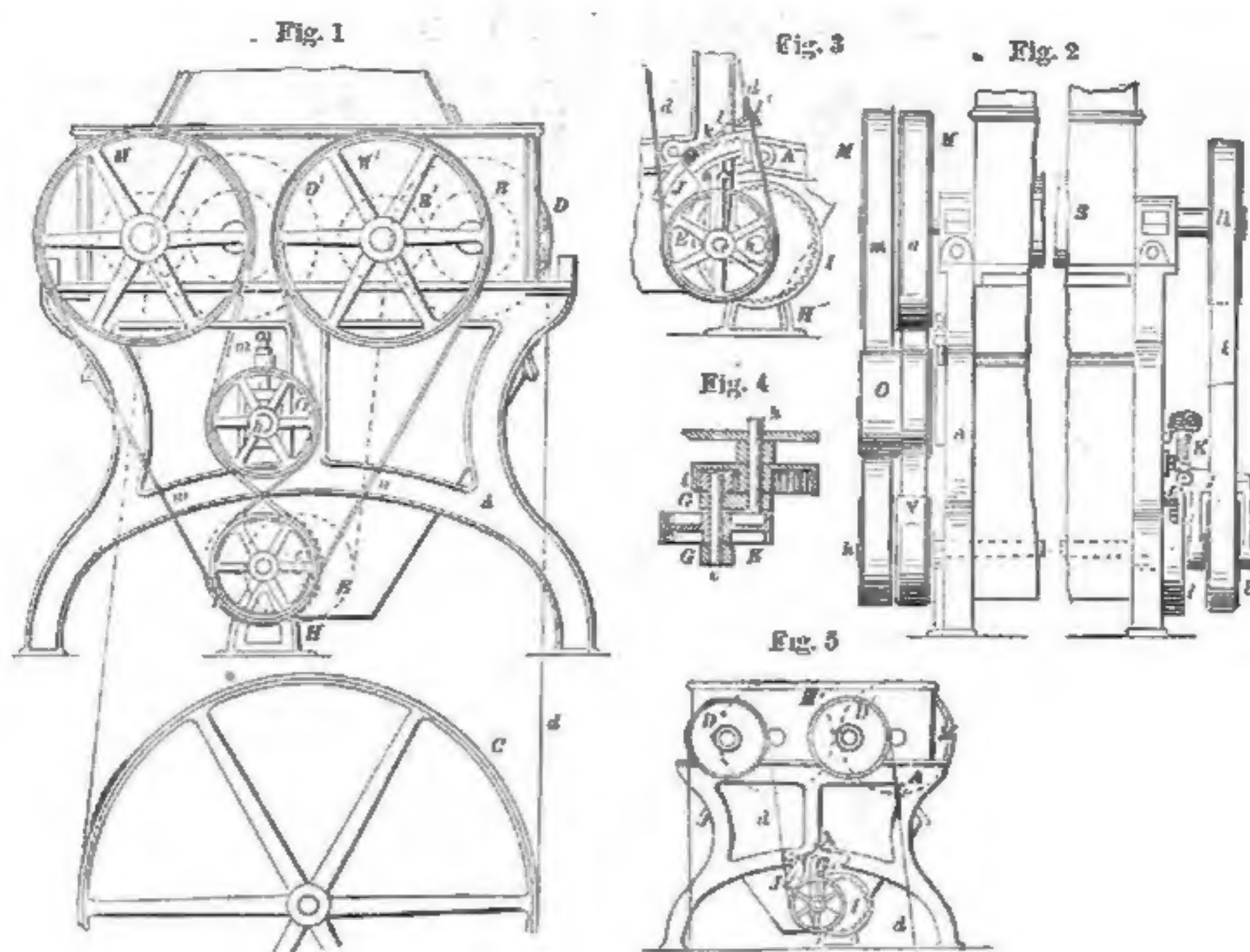


ROLLER MILL.

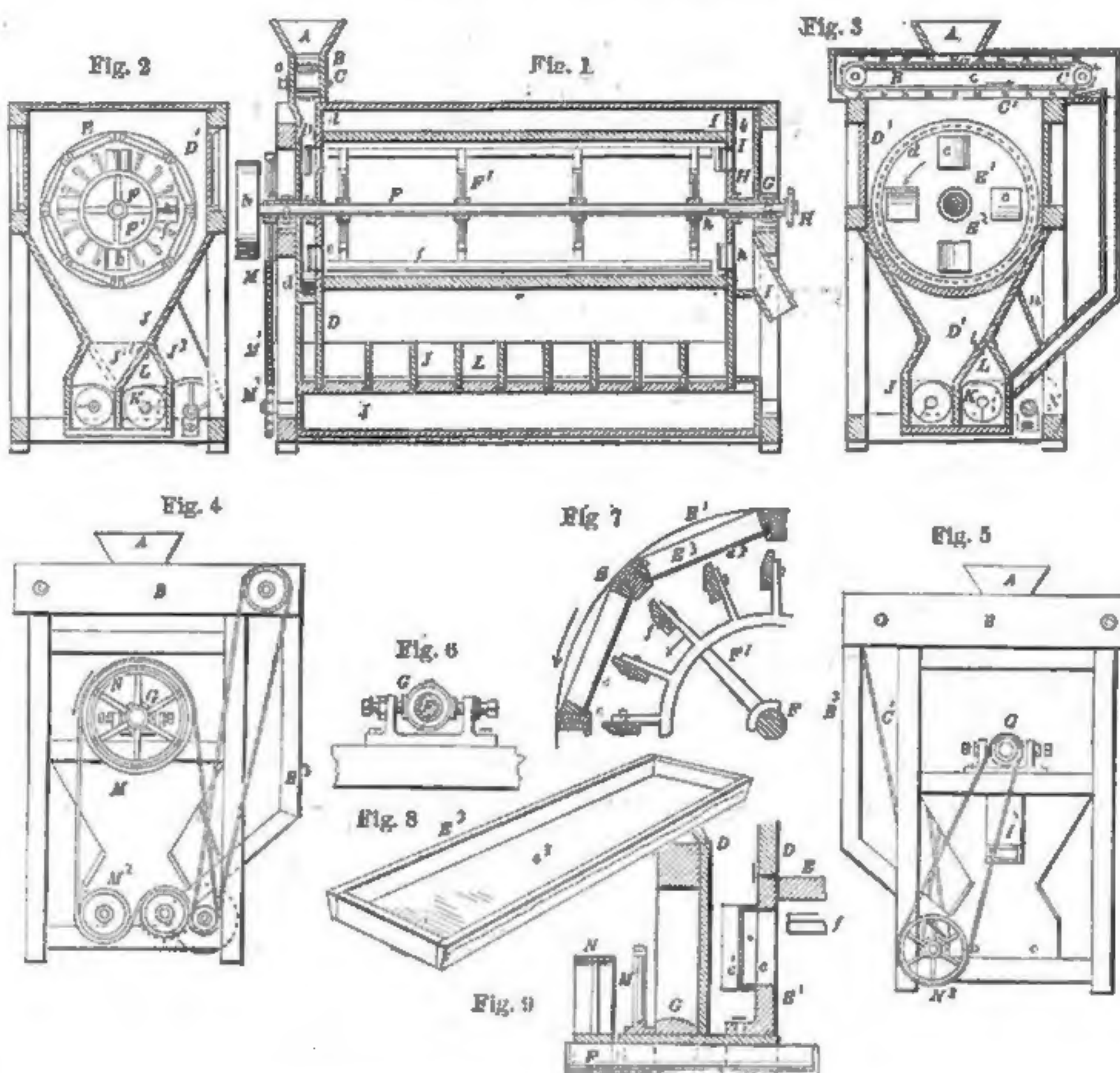
Letters patent No. 298,206, dated May 6, 1884, to Noah W. Holt, Buffalo, N. Y. This invention relates to an improvement in that class of roller mills in which two pairs of rollers are employed; and it has for its object to provide a belt driving mechanism which can be tightened when required, and in which a counter-shaft is employed which is supported in fixed bearings. In the drawings Figure 1 represents an elevation of the driven side of a roller mill provided with the improvement: Fig. 2 is an elevation of the roller mill. Fig. 3 is a side elevation of the tightening device on the driving side of the roller mill. Fig. 4 is a horizontal section in line *x x*, Fig. 3. Fig. 5 is an elevation of the driving side on a reduced scale. The drawings so plainly indicate the nature of the invention that detailed explanation is unnecessary.

CENTRIFUGAL SEPARATOR.

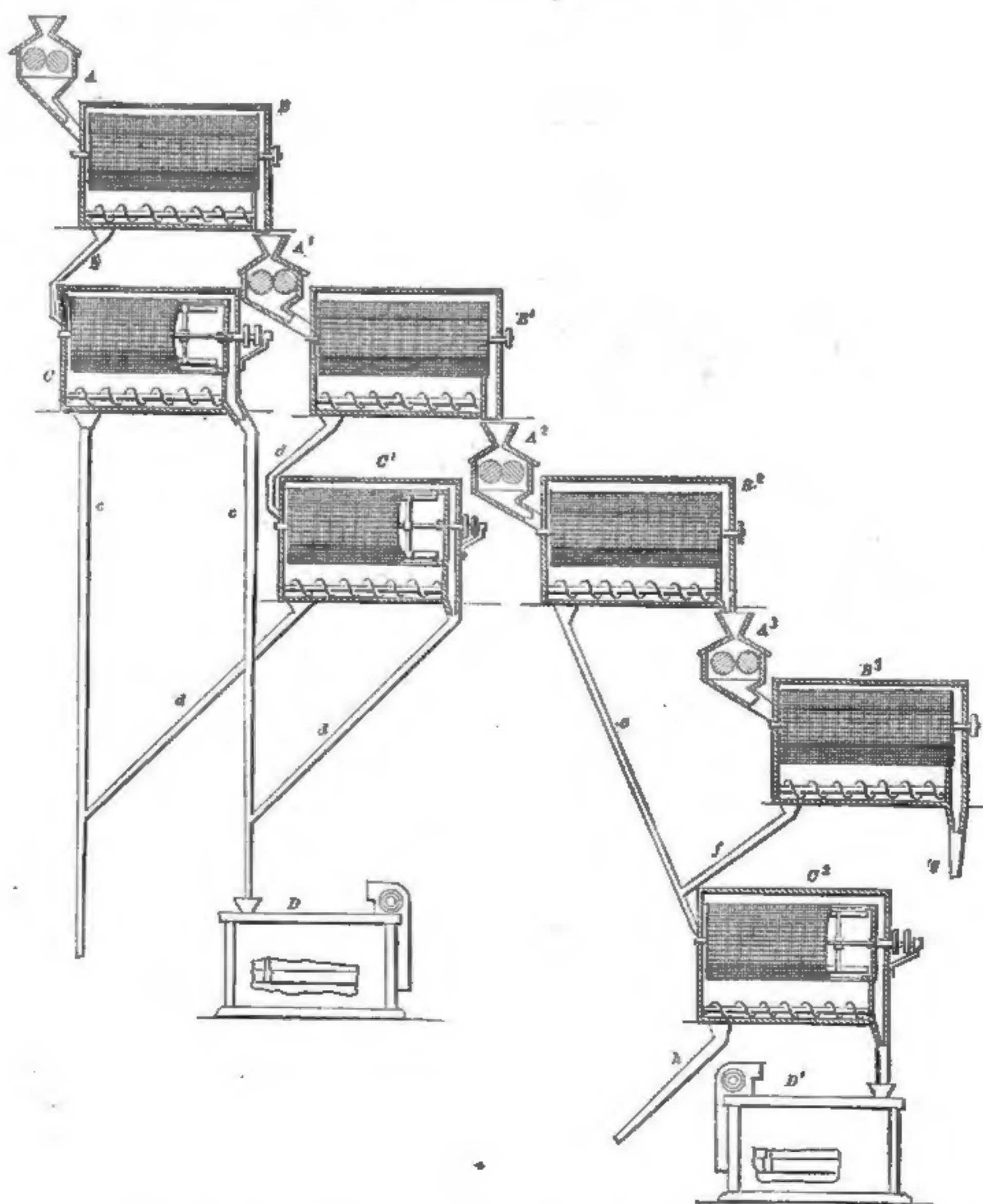
Letters Patent No. 297,994, dated May 6, 1884, to Justus J. Hendrickson, of Norristown, assignor of one-half to Charles K. Bullock, of Philadelphia, Pa. This invention has reference to centrifugal separators for milling purposes, and the object is to provide a machine which shall be capable of separating the partially-reduced grain from the flour in an efficient manner. In the drawings Fig. 1 is a longitudinal sectional elevation of a centrifugal separator embodying the improvements on line *x x* of Fig. 2. Fig. 2 is a cross-section of same on line *y y* of Fig. 1. Fig. 3 is a cross-section of same on line *z z* of Fig. 1. Fig. 4 is an elevation of the feeding end of the machine. Fig. 5 is an elevation of the delivery end of the machine. Fig. 6 is an elevation of the adjustable bearings for the reel and beater shafts. Fig. 7 is an enlarged cross-section of a part of the reel and beater. Fig. 8 is a perspective view of the screen-frame removed from the reel, and Fig. 9 is an enlarged view of a portion of the feeding-head of the reel to show the packing. A is the hopper, into which the flour to be treated is discharged. From this hopper it passes down into the chamber B, and is received upon an endless band, carrying brushes, and running over two rollers, one at each end of the said chamber. A board is located immediately below the band as it passes under the hopper. The flour is thereby carried over one of the rollers, and deposited on a screen, over which it is swept by the brushes, the finer particles passing through into the feed-chamber, and the larger particles and impurities being brushed over an incline and discharged by tube from the machine or into a return-conveyer. The flour which passes into the chamber is in good condition for the centrifugal action of the machine. As the screen extends across the machine, there is a constant shower of flour descending, thereby tending to keep it in a less packed condition. The falling flour is received upon a curved floor, at the bottom of the chamber, from which it is picked up and discharged into the reel by scoops, having their openings pointing in the direction of rotation of the reel, and carried upon the reel head of the reel, and arranged to form a curved or oblique passage-way through said reel-head by meeting with apertures or perforations. This head is secured to a sleeve, which encircles the beater shaft, whereby the reel is adapted to rotate upon said shaft, and rotates within a perforated partition. The scoops thus feed the fine-divided material falling through



ROLLER MILL. PATENT NO. 298,206.



CENTRIFUGAL SEPARATOR. PATENT NO. 297,994.



ART OF MANUFACTURING FLOUR. PATENT NO. 298,250.

the screen directly into the reel without compressing and caking it. The discharging-head of the reel is made identically like the feeding-head, and as it is designed to free the tailings from the reel into the chamber I, from which they pass by spout, the scoops fitting over the apertures, are upon the inside of the reel. This head rotates in a perforated partition, and the joint is packed and this head is secured upon a sleeve, carried by the beater shaft as before. If desired, the discharge spouts or scoops may be arranged upon the outside of the reel-head, and so formed as to offer a retarding effect to the tailings. A positive feed and positive discharge is, however, preferred, to prevent overloading the reel, and thus render it capable of performing its function to the best advantage.

ART OF MANUFACTURING FLOUR.

Letters Patent No. 298,250, dated May 6, 1884, to John B. Wheatley, Detroit, Mich., assignor of one-half to August Heine, Silver Creek, N. Y. This invention relates to an improvement in the manufacture of flour by the system of gradual reduction, and is designed to eliminate from the flour more perfectly the impurities which are liberated in the reduction of the grain. The accompanying drawing represents a train of machinery which may be employed in practicing this improved method of manufacturing flour. A represents a roller mill or other suitable reduction machine, whereby the grain is coarsely broken, so as to liberate the dirt and other impurities adhering to the kernels. B represents a separating reel or sieve, ordinarily called a "scalping reel," whereby the flour and fine grits produced in the first reduction are separated from the coarse fragments of the grain. The quantity of flour produced in the first reduction is very small, and the flour is discolored by the impurities which are liberated or detached from the grain, and are of about the same fineness as the flour, so that they will pass through the same bolting cloth through which the flour passes. The flour and fine impurities which have passed through the bolting cloth of the first separator, are conducted by a spout into a centrifugal reel, in which the flour is separated from the fine impurities which are commingled therewith. The centrifugal reel is provided with revolving beaters constructed in a well-known manner, whereby the flour is driven through the bolting cloth of the reel, while the fine and light impurities remain in the reel, and are discharged through a spout into a middlings purifier. The flour is conducted to the flour bin. In the middlings purifier the tailings from the centrifugal reel are subjected to the combined action of sieving and an air-current. A' represents the second reduction machine, which receives the tailings from the scalping-reel B and reduces the same to a greater degree of fineness. The reduced material passes from the reduction machine into the second scalping reel. The fine material which has passed through the meshes of the reel is conducted by a spout to a centrifugal reel. The flour passes through the meshes of the reel, and is conducted to the flour-bin, while the grits and light impurities are delivered to purifier. The further operation of this system of manufacture is clearly indicated by the drawings, and requires no further elaboration in this connection. The limits of our space, in fact, prohibiting further description.

WILHELM & BONNER,
Solicitors of Patents,
Attorneys and Counselors in
Patent Causes.

No. 284 Main St., Buffalo, N. Y.

IS PRODUCING ASTONISHING RESULTS.

YOUNGSTOWN, O., March 15th, 1884.

GEO. T. SMITH PURIFIER CO., JACKSON, MICH.

Gents: We are running the tails of six purifiers and one middlings reel, also the blow room stock of seven purifiers, to the last Centrifugal you sent us. The reel is doing splendid work, in fact is producing astonishing results. You will send me another one just like it to make a final finish of our low grade stock. When this fifth centrifugal is added to our City Mill, as above indicated, the mills that stand ahead of it in purity of product, and economy of yield, are few and far between.

Respectfully Yours, HOMER BALDWIN.

YOU CAN SECURE LIKE RESULTS. WRITE US FOR PARTICULARS.

THE GEO. T. SMITH MIDDINGS PURIFIER CO., JACKSON, MICH.

MILLS

Parties desiring to sell, buy, or lease mill property should not fail to write us. Our List covers various sections of country, and we have mills at all prices, and can offer some decided Bargains in the West.

GILLSON, BENJAMIN & CO.,
97 Metropolitan Block, CHICAGO, and cor. 8d Ave. and 8d Street, MINNEAPOLIS.

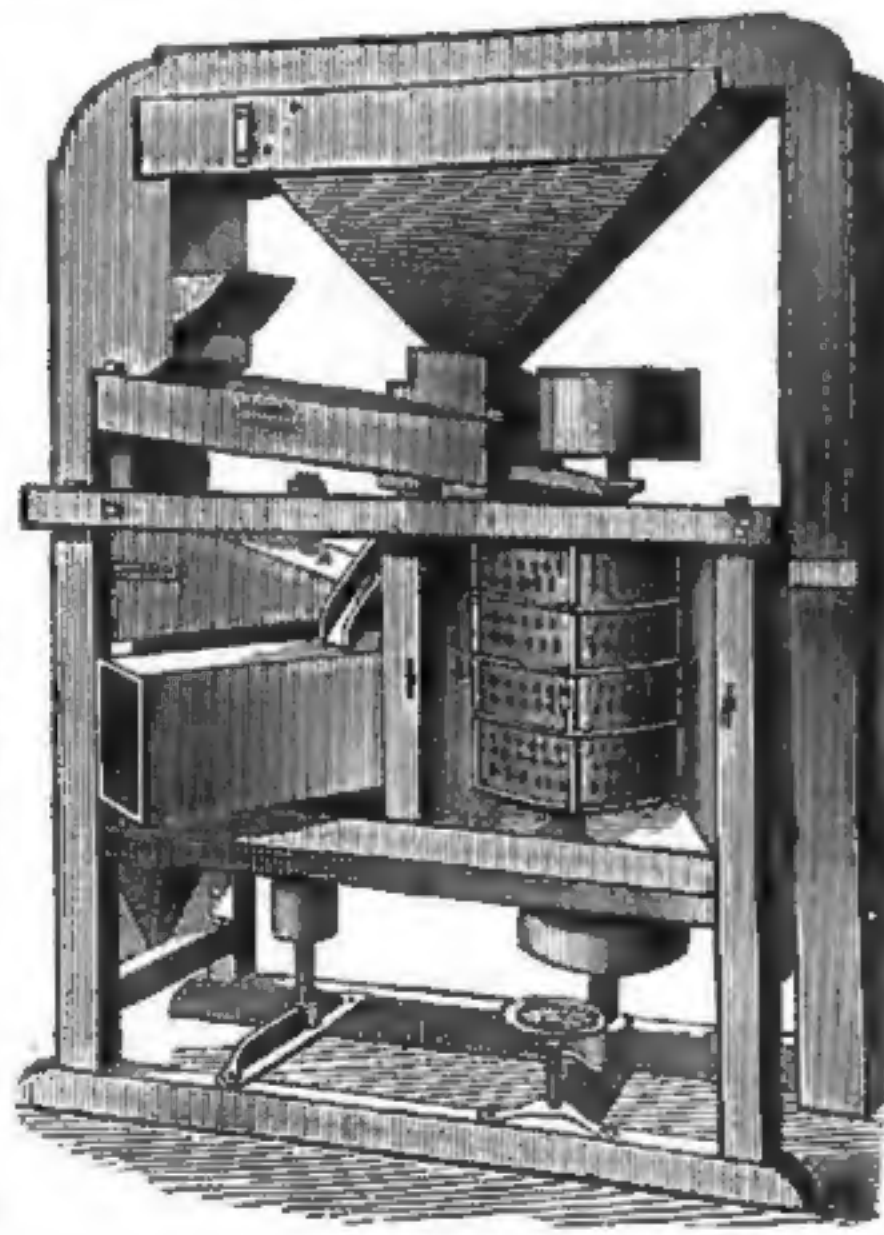
TRIMMER'S Improved Adjustable GRAIN RUBBING, POLISHING — AND — SEPARATING MACHINE COMBINED.

It will clean, rub and separate wheat, and take out the rat balls, black steel seeds, joints of straws, cockle and other impurities. It will also rub off more fuzzy ends and dust from the creases of the berries, by rubbing the wheat together as it passes up between the rubbers, so each berry must get rubbed, scoured and polished alike. It will do all of this work better and last longer than any other machine of the kind. All this we guarantee. It will also clean barley and rye.

Send for Description and Price List.

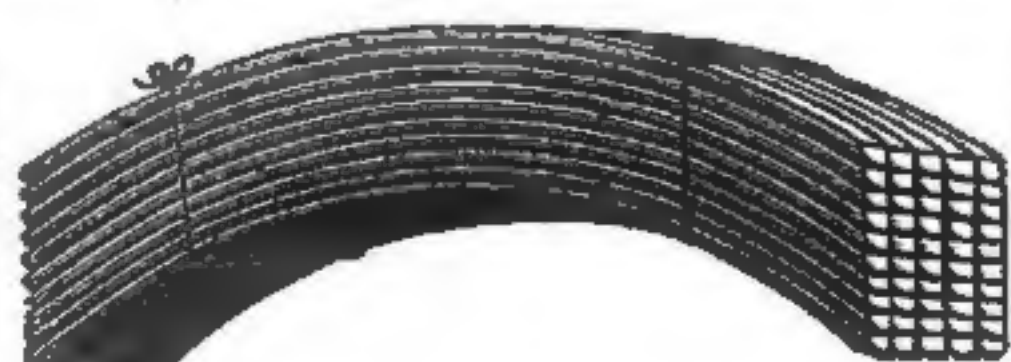
Kreider, Campbell & Co.

Millwrights and Machinists,
1030 Germantown Ave., PHILADELPHIA, PA.



HEAD LININGS AND COILED BARREL HOOPS.

Our Celebrated Patent Head Linings are straight Rounded on their upper edge nail on barrel. They will freely through the square are packed. We can furnish from twelve to seventy-two GOOD Head Lining can



Round Edge Bent Barrel grained from end to end, and crimped or bent ready to not mold, as the air circulates bundles of 250 in which they them any desired length, inches, and as cheap as any be sold.

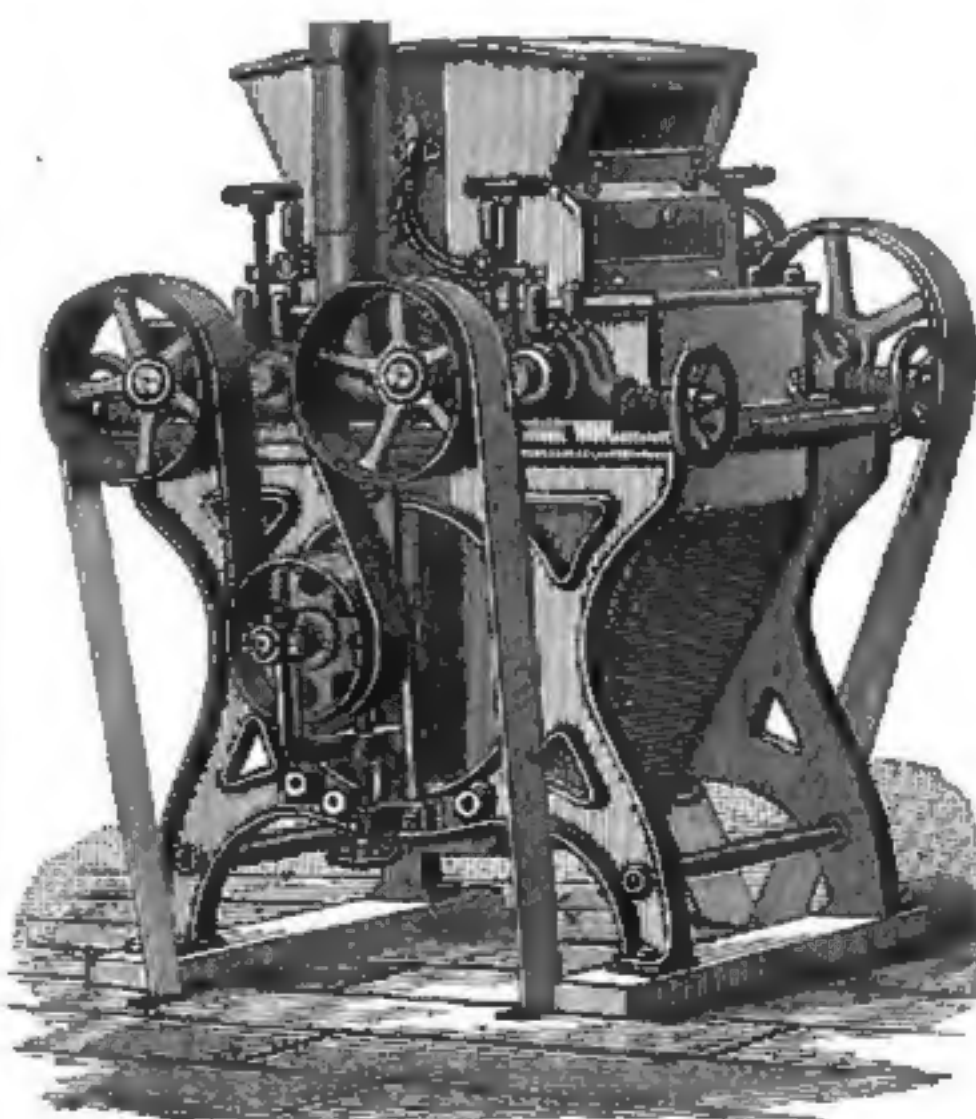
CAN FILL ALL ORDERS AT SIGHT.

REED & SILL COOPERAGE CO.,

DETROIT, MICHIGAN.

THE ORIGINAL SIX-INCH ROLLER MILL.

THE BEST ROLL IN THE MARKET RICKERSON'S PATENT IMPROVED ROLLER MILL.



Our six by twenty rolls weigh 175 pounds each making 700 pounds to drive in a double set roller mill, as against 1800 pounds in the old style mill; this fact enables us to run with greater speed, with no danger of hot journals, hence our greater capacity. Produces better results, because there is less Pulverizing and Better GRANULATION, the point of contact being much less on a SIX-INCH ROLL than the old system; the STOCK BEING KEPT LARGER and more middlings produced on each reduction. It is a well established fact that the object in gradual reduction milling is to make as large a percentage of middlings as possible, and we claim to make MORE MIDDINGS from a bushel of wheat THAN ANY OTHER ROLLER MILL, and we are prepared to prove our claim. The MORE MIDDINGS the greater percentage of PATENT FLOUR, and better COLOR of ALL grades. We build the only Roller Mill with PATENT EXHAUST ATTACHMENT for taking away all GENERATED HEAT, thus doing away with the GREATEST ANNOYANCE that millers have experienced in running the gradual reduction system, at the same time keeping the stock cooler as it passes

to the Reels and Purifiers, consequently the separations are made more easily. We use nothing but the Ansonia Chilled Iron Roll, with steel journals, ground, and run them entirely with LONG belts. With a feed device for throwing out and in easily, with a leveling device that is positive and perfect, and an adjustment so entirely positive, that feed can be stopped or cut-off, and put on again without readjusting rollers. WE DO NOT DEPEND UPON THE STOCK TO KEEP OUR ROLLS APART. We are prepared to furnish plans for our Gradual Reduction system on short notice, and fill orders for our Mills promptly. We make both Corrugated and Smooth Rolls, Twelve, Fifteen, Eighteen and Twenty Inches Long and Six Inches in Diameter. Prices Sent on Application. Correspondence solicited. Address,

O. E. BROWN MANUFG. CO.

GRAND RAPIDS, MICHIGAN.

SCIENTIFIC AND MECHANICAL

BOILERS.

THE following figures in regard to boilers are taken from W. G. Hamilton's book, "Useful Information for Railway Men," and relate to an ordinary horizontal flue boiler: One actual horse-power equals 33,000 pounds raised one foot in one minute. Applied to steam engines, it is the mean steam pressure on the piston, in pounds, multiplied by the velocity of the piston in feet per minute divided by 33,000. From this deduct 25 per cent. in condensing engines and 13.1 per cent. in high pressure for working friction and pumps, and the balance will be the actual horse-power. One horse-power in a boiler is its capacity to generate enough steam in one minute to raise 33,000 pounds one foot. The capacity of a boiler to generate steam is, of course, governed by the form of the boiler, whether tubular or not, and whether the boiler and its flues or tubes are horizontal or vertical. In boilers for each horse-power there is required:

- 1 cubic foot of water per-hour.
- 1 square yard of heating surface.
- 1 square foot of fire-grate surface.
- 1 cubic yard of capacity.
- 28 square inches of flue area.
- 18 inches of area over bridge wall.

* * We were shown the other day, says the *San Francisco Journal of Commerce*, something that promises to create a revolution in the cooperage business. It was nothing more or less than barrels, kegs, etc., manufactured from straw pulp. They are made by pressure in machines, or rather moulds, made expressly for the purpose. The barrel machine will make 25 barrels per hour, while one man can attend to three of them, making 750 barrels per day of ten hours. The mould can be adjusted to any required size of barrel, keg, etc. Barrels, kegs, baskets, boxes, anything and everything coming under the denomination of woodenware—even car wheels—can be made by these wonderful machines, and at prices about half of those made by the ordinary method. A three horse-power engine per machine is all the motive power required. Any kind of vegetable fibre can be used, and the patent covers everything in the line of animal and vegetable fibre that may be used. The barrels we saw had wooden hoops and weighed 16 pounds. The barrels, kegs and pails cost about half of what wooden ones do.

* * The importation of unwholesome tea having become so alarming as to occasion prohibitory legislation by Congress, coffee now attracts attention in its turn as an article shamefully tampered with. When it is charged that in two Brooklyn mills beans of an inferior grade are colored with poisonous materials in order to imitate Government Java, interference with this business should be prompt and decisive. Chrome yellow, Prussian blue, Venetian red, lampblack, yellow ochre, umber and soapstone are only a few of the substances said to be thus employed, and enough arsenic to make a cup of coffee poisonous has been found on some of these colored beans. Advocates of temperance, who rely greatly on the substitution of coffee for alcoholic stimulants, should be especially eager in investigating this dangerous form of fraud.

* * In nearly all the large manufacturing towns of England technical schools, or schools of design, have been established for the purpose of developing either artistic culture or precision in mechanism. But even

without these educational aids, says an exchange, America has evolved a far superior race of artisans to those which England or any European country possesses. The element of specialty seems inborn with the American mechanic, who adapts or invents a machine for every purpose of manufacture. Whether it be the result of climatic influence or of admixture of blood, it is certain that America has united delicacy of finish and special adaptation of purpose to the solidity and honesty of British machinery.

* * The locomotive of to-day is a giant by the side of the production of 1851. The New York Central express engine weighs 84,000 pounds, or nearly two and one-half times heavier than its above-mentioned prototype. The cylinders are 18 inches by 24. The average man's head is far below the top of the driving-wheels, which are 75 inches in diameter. In 1854 a New York express passenger locomotive traveled 25,000 miles in a year; last year the average mileage per engine stood between 70,000 and 80,000 miles. A locomotive for express passenger service costs, taking the experience of the past few years, from \$3,000 to \$10,000 to build.

* * As showing the intensity of the electric light at long range, it may be said that at an exhibition at Washington during last month a 4,000-candle light was placed on top of the Washington Monument, 430 feet high. Its power close by was not noticeable, but at a point two miles away it threw a glare so bright that a person could read a newspaper or note the time on the face of a watch with perfect ease. There is apparently no limit to the possibilities that may be reached in the problem of lighting by electricity, and it is clear that one of them is the employment of that agent for the protection of vessels and as an aid to navigation.

* * The last report of the Department of Agriculture at Washington announces the final collapse of the attempt to cultivate the tea plant in the United States. The appropriation for the purpose is exhausted, and the surplus plants are scattered to the four points of the compass. About \$25,000 have been expended in this enterprise, the commencement of which was a blunder, and the end a fiasco. It is admitted that the culture of this plant is commercially unprofitable, that the climatic conditions are unfavorable for its growth, and that it can be produced in the United States only as a curiosity where profit is not considered.

* * A rumor coming from Germany threatens, if authenticated, to make a considerable difference in the value of stock in telephone companies, according to the *New York Sun*. It is said that a pamphlet about twenty years old has just been unearthed in some German library, in which an inventor fully describes the telephone and illustrates it by woodcuts. The benevolent author presents his invention to mankind at large as a free gift, and the question may therefore arise whether telephone patents granted only four or five years ago will be of any further value.

* * A recent report of the chief of the bureau of statistics on the internal commerce of the United States shows that the tonnage of American and foreign vessels entered in the foreign trade at the ports of Boston, New York, Philadelphia, Baltimore and New Orleans for the fiscal year ending June 30, 1883, amounted to 10,279,209 tons. Of this 13.08 per cent was entered at Boston, 60.74 per cent at New York, 8.34 per cent at Philadelphia, 8.69 per cent at Baltimore, and 7.15 per cent at New Orleans.

* * About one hundred stoates and weasels, which had been caught with con-

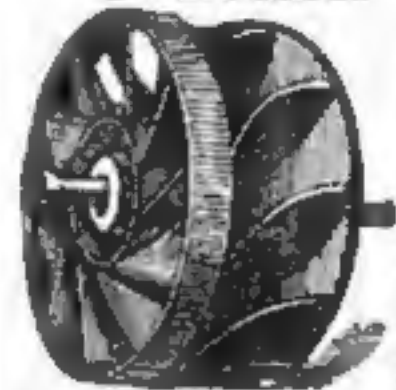
siderable difficulty in different parts of Lincolnshire, England by a vermin catcher, have just been sent to New Zealand. They have been purchased by the Government of that country for the purpose of destroying the rabbits which overrun the colony. One thousands five hundred live pigeons have been shipped for the consumption of the animals during the voyage.

* * Occasional notes in our British contemporaries indicate that the Giant's Causeway and Portrush Electric Railway, which is operated by power derived from a waterfall, is prospering. The latest incident pointing to its vitality is the killing of a horse which had been grazing alongside the track and ignorantly touched the electric conducting rail with its nose.

* * So far as heard from, the hottest place on the habitable globe is Bourke, in Australia. According to a correspondent of the *New York Times* the temperature in January, 1884, varied from 108 degrees to 122 degrees, the average being 110. This was taken from government registration.

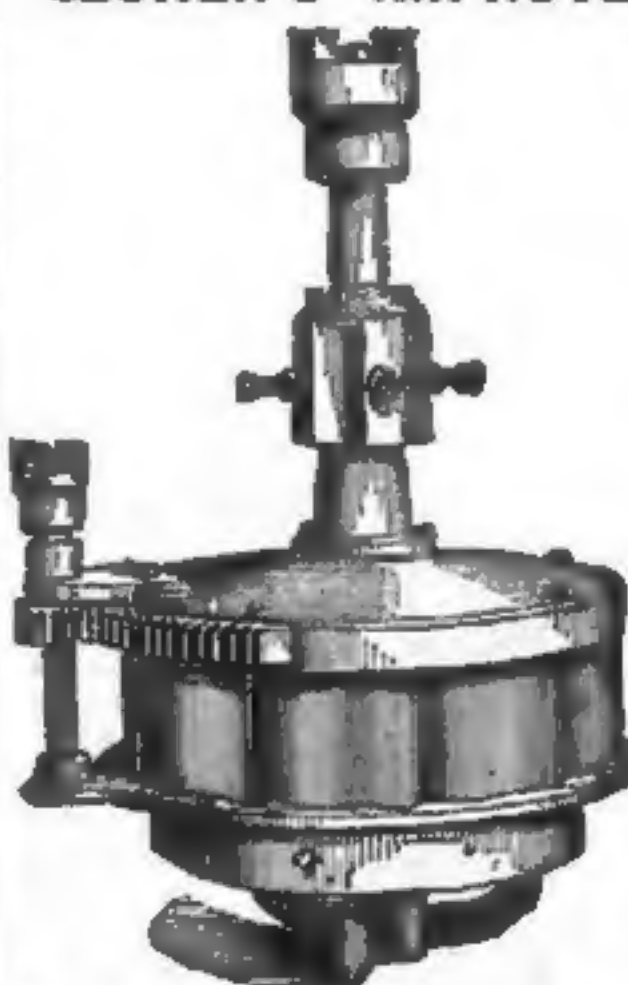
* * It is estimated that there are now in this country 350,000 manufacturing establishments, employing 6,000,000 workmen and \$4,500,000 capital, and that the product is worth \$8,000,000,000 a year, \$2,000,000-000 more than that of Great Britain.

DELOACH WATER WHEELS



From 2-10 to 2,000 horse power. Simplest, most durable, best gate for holding the water, fully equal in percentage of power to any wheel made, and price places it in reach of all. Send for illustrated catalogue. A. A. DeLOACH & BRO., Manufacturers, also of Milling Machinery, Atlanta, Ga. Mention this paper.

LESNER'S IMPROVED TURBINE.



Simple, Durable, Strong. Gate Works EASILY—AND—RAPIDLY. PERFECT Satisfaction—IS—GUARANTEED.

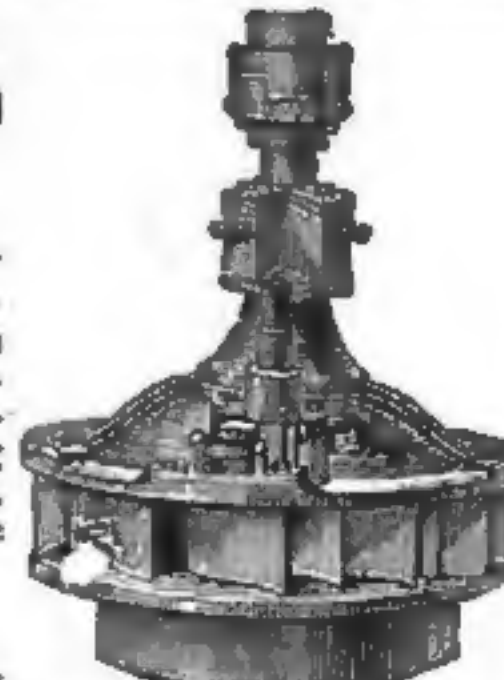
W. B. WEMPLE'S SONS, FULTONVILLE, N. Y.

MERCER'S

RELIABLE Turbine Water Wheel.

This wheel is acknowledged one of the best on the market. Has valuable improvements in the construction which is commanding the attention of buyers. Send for catalogue and price list. T. B. MERCER,

WEST CHESTER, PA. CHESTER CO., PA.



Second-Hand Turbines.

FOR SALE CHEAP.

The following Second-Hand Turbines have been repaired and are in good condition. (Discount 10 per cent. for cash, F. O. B. cars here):

| | PRICE. |
|---|--------|
| One 18-inch Bodine Jonval, against the sun, - - - | 50.00 |
| One 21-inch "Eureka," Spider on top, against the sun - - | 125.00 |
| One 30-inch Mosser, against the sun, - - - | 125.00 |
| One 30-inch old style Eureka, with the sun, - - - | 125.00 |
| One 40-inch Leffel, with the sun, - - - | 125.00 |
| One 48-inch Eureka, - - - | 200.00 |
| One 48-inch Eureka, good as new, latest improvements, running part entirely new - | 260.00 |
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Winslow Wood, Allentown, Pa.

Improved Success

Percentage.

| | |
|----------------|-------|
| Full Gate..... | 86.29 |
| 3/4 Gate..... | 86.07 |
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Burnham Bros., York, Pa.



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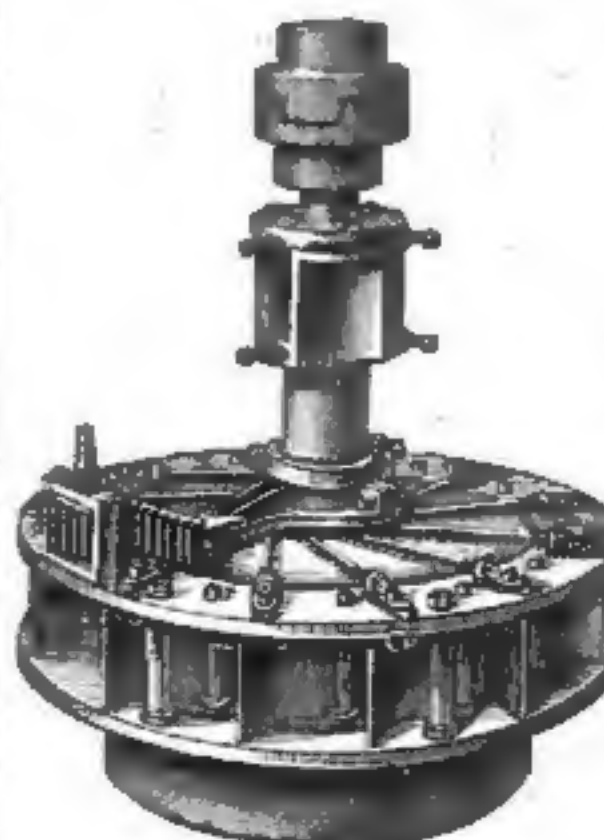
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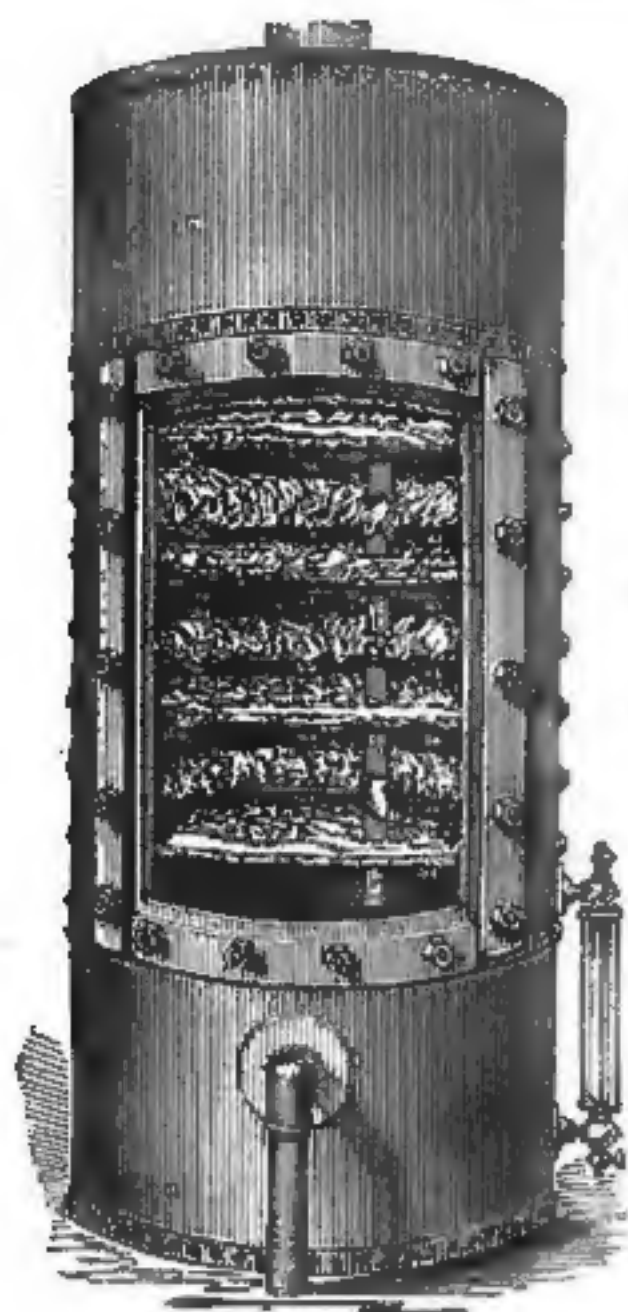
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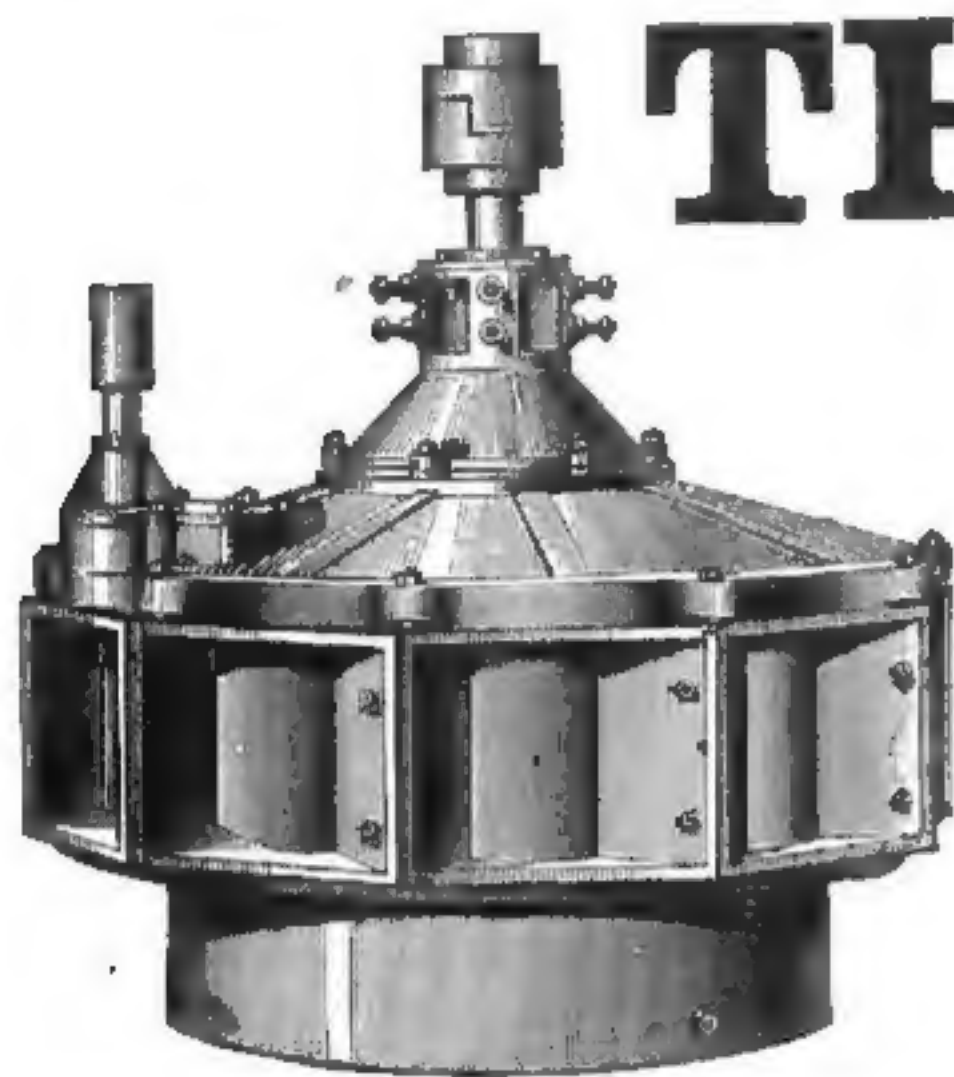
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This cut is a fac simile of the appearance of a No. 5 Heater at work on ordinary lime water, when the door was removed after the heater had been Running two weeks. Illustrated Catalogue Free.

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| 30 Inch Wheel..... | .8000 | .8011 | .7814 | .6850 |

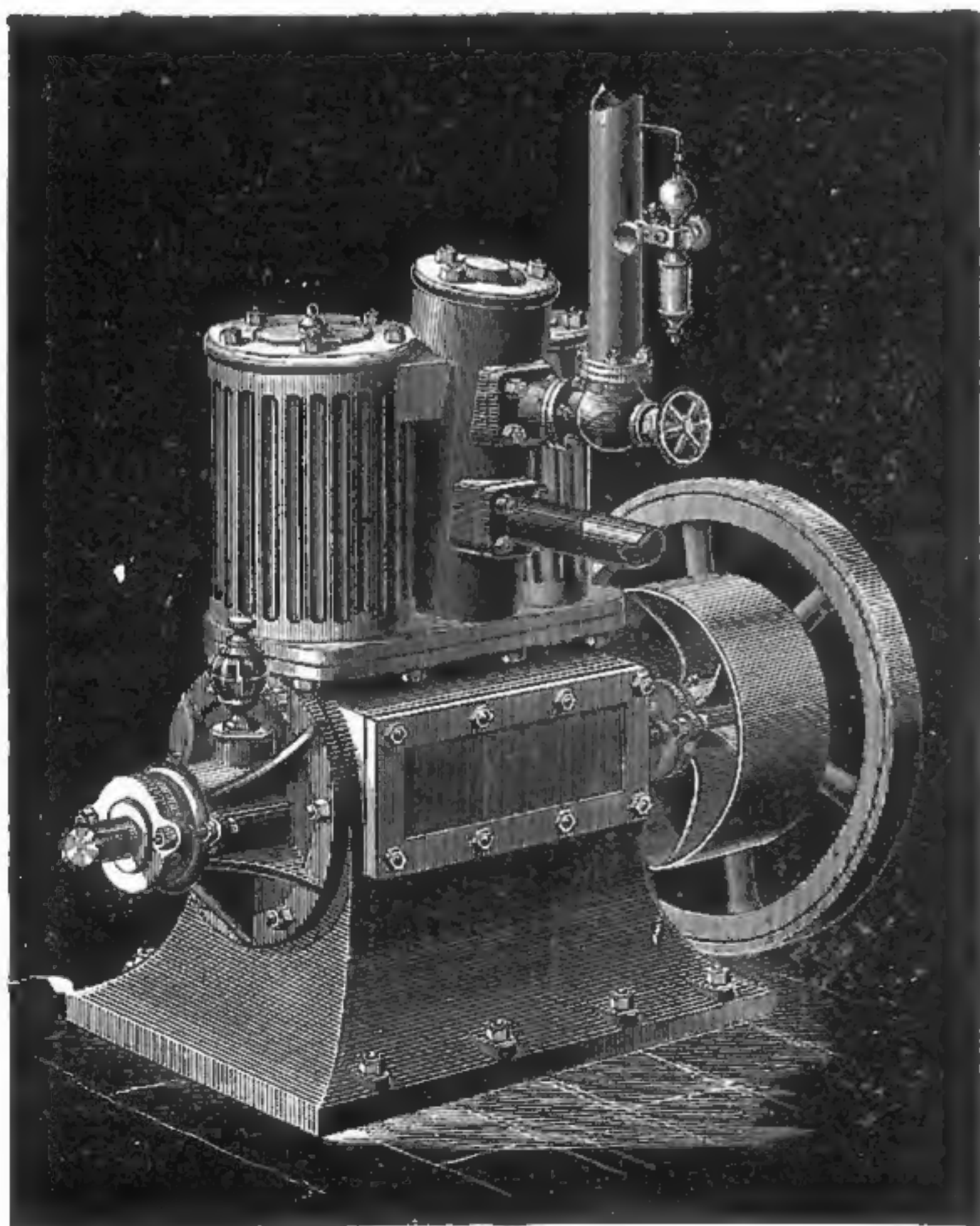
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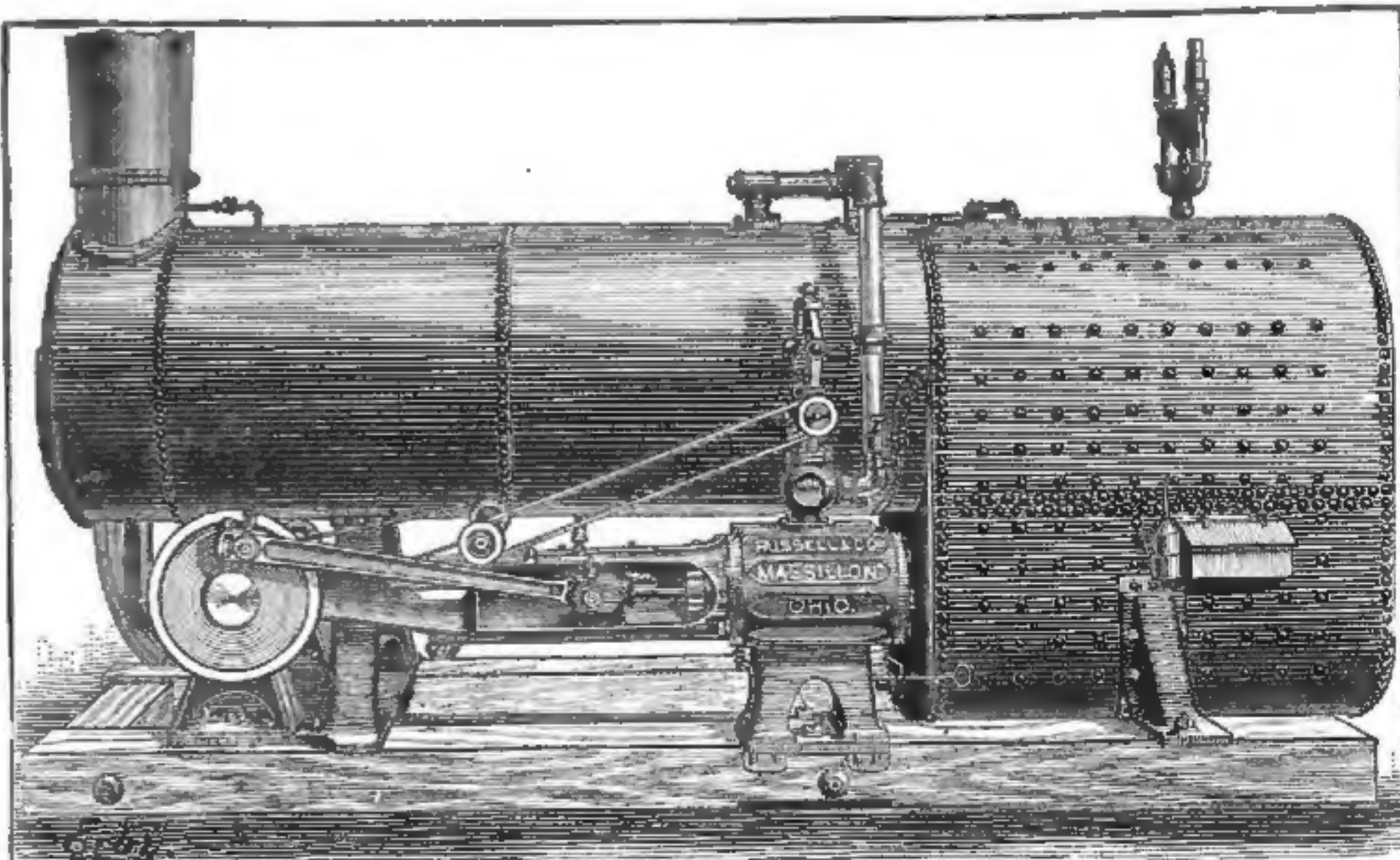
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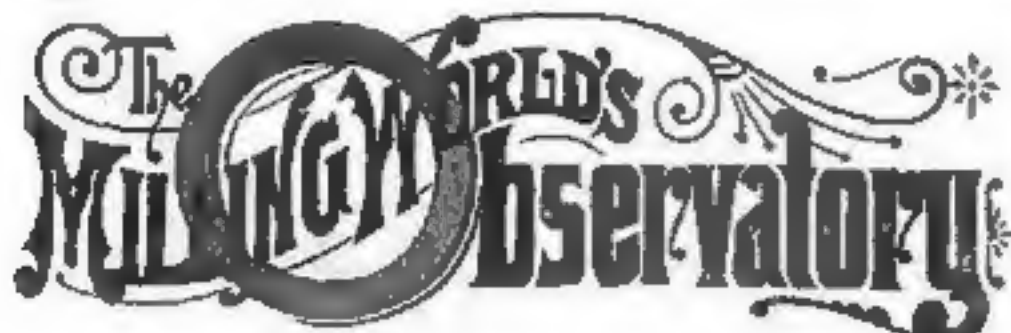
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Notes from the Mills.

St. Leon, Manitoba, is to have a \$10,000 oat meal mill.

The flouring mill of W. C. Hall, Brazil, Ind., is being changed to the roller system.

W. J. Rose & Co., Dubois, Pa., will start their mill on the Rider system in a few days.

A swarm of locusts nine miles wide have settled in the Canton of Texmalca, Mexico and are destroying all herbage.

The Stilwell & Bierce Mfg. Co., of Dayton, Ohio, are kept busy putting up new mills, and remodeling old ones with the Odell Roller Mill.

Mr. P. R. Reese, a grain broker, having an office at 17 Moore street, New York, was suspended from his privileges as a member of the exchange.

The Miller Co., Canton, O., has shipped to Hardesty Bros., Canal Dover, O., one of their automatic feeds to be placed on one of their old rolls.

Arrangements have been made with the Farmers' Elevator company for the erection of an independent elevator at Moorhead and at Kragnes, Minn.

Commins & Allen, Akron, Ohio, have contracted with Messrs. Allis & Co., for the additional roller mills to increase their capacity, also for a Reynolds Corliss engine.

The mill of McDowell & Basye, some time since burned down, at Simpsonville, Ky., is being replaced by a 100-barrel roller mill of the most approved kind.

Some wheat was shown at St. Louis last week from the neighborhood of Highland, Ill., in which some very lively young Hessian flies were noticed doing quite well.

It is reported by observers from Iowa that from 10 to 15 per cent less wheat has been sown in that State this spring; in oats the acreage is largely increased; also flax.

Linney Bros & Co., Dennison, Iowa, have contracted with Messrs. Allis & Co., for eight pair Allis rolls in Gray's noiseless belt frames, and other machinery to refit their mill to the roller system.

M. C. Whitehurst, Canal Winchester, Ohio, has contracted with Messrs. Allis & Co., for twelve pairs Allis rolls in Gray's noiseless belt frames, and special machinery necessary to equip the mill on the roller system.

Geo. Crossley & Son, of Princeton, Ill., have contracted with Messrs. Allis & Co., for a No. 2 four break reduction machine, a Gray's noiseless belt roller mill, and machinery to equip their mill on the roller system.

Nashua Water Power Co., Nashua, Ia., have contracted with Messrs. Allis & Co., for the outfit necessary to place their mill on the roller system, including ten pair of the celebrated Allis rolls in Gray's noiseless belt frames.

The Meriwether *Vindicator* says: Spring oats—the cold weather killed the earlier sown—are looking well. With good seasons the crop will be average one. Reports from the wheat are not so encouraging. Peaches are abundant.

Hardesty Bros.' 300-barrel mill at Canal Dover, O., has started on the Rider system. This mill is reported as starting with the best results of any mill in that state and has it is reported an easy capacity of 50 bls. more than the guarantee calls for.

Dr. Pietrasadta, Secretary of the Hygienic Society, has presented a memorial to the Academy of Sciences, advocating in the name of scientific facts, political economy and free trade, the free importation of American salted meats into France.

The Advance Elevator Company, St. Louis, it is said, will in a short time begin the construction of an elevator on this side of the river to be operated in connection with their elevator on the other side. The one on this side will have a capacity of 500,000 bushels.

The price of corn and beans is now higher in all the Mexican region bordering on Texas. Along the line of the Mexican National Railway a large trade in corn has developed this season, and from Texas much grain is being constantly shipped to supply the demand.

Thanks to the farmers and workers there is no chance for a panic in the United States. "The country," says the *Kansas City Times*, "is too full of wheat, of produce, of money, of goods, to get up a genuine panic. Trade is a little dull,

but there is no good cause for business to be panicky."

The Ellensburg, Oregon *Localizer* says: "The growing wheat looks very promising; the soil is unusually full of moisture, and the coming harvest all but a certainty of being a full one. The old crop remains mostly in the granaries unsold, the price being only 40 cents a bushel, and light demand at that."

Kauffman Milling Co., of St. Louis, have closed contract with Messrs. Allis & Co., to increase the capacity of the "President Mills" at Bethalto, Ill., from 750 bbls. to 1100 bbls. daily capacity. This mill was built last year by Messrs. Allis & Co., and has done so well that they will make the present increase in capacity.

J. Bachtell, Auburn, Ind., after calling on Hicks & Cooper, Canton, O.; J. M. Corl, Navarre, O.; F. Amendt, Pierce, O., and Hardesty Bros., Canal Dover, O., who are using the Rider break and system, was so well pleased that he gave The Miller Co., Canton, O., his order for a complete outfit of breaks and rolls.

A large and influential deputation of members of the Board of Trade, corn exchange, and the shipping interests of Montreal was to proceed to Ottawa last week to appeal to the government to abolish tolls on all Canadian canals between Chicago and this port. There were, at the time, sixteen ocean steamships in port, every one offering to take grain across the ocean free, yet not one can get a cargo.

Mr. H. Corl, of the firm of Corl & Blake, Canton, O., after visiting the mills of Hardesty Bros., Canal Dover, O., came to the conclusion that his firm's full roller mill was not doing as good work as is possible by using Rider breaks and system. They therefore gave the Miller Co., Canton, O., a contract to overhaul their roller mill and put in Rider breaks in place of their rollers. The Rider system will be used entire.

A Dubuque (Iowa) telegram says: "Notwithstanding the low prices of wheat in Chicago, Iowa millers are hardly able to procure enough spring or winter wheat to keep their mills running. There is no good wheat in this market for sale, nor in surrounding towns. The last lot in this city sold to-day for 95 cents." Similar complaints of scarcity of milling wheat come from Western millers. The winter wheat fields never looked better.

The farmers throughout a large part of Central Illinois, were, up to last week, prevented from planting any of the large corn crop which is annually cultivated. Repeated heavy rains is the cause of this serious delay, and the hundreds who are itching to be in the fields with plow or check-rower are compelled to seek dry places and watch the clouds go by. It is very seldom that the first week of May passes without a large area of ground being planted in corn.

The starch sugar industry in the United States consumes daily 400,000 bushels of corn and produces grape sugar and glucose syrup of the yearly value of \$10,000,000. There are thirty factories in the United States, furnishing their product to brewers and for the manufacture of table syrup and the adulteration of cane sugar. It is also largely used in confectionery, in canning fruits, making fruit jellies, and in cooking. Artificial honey is made from it, and so, also, is vinegar.

"It is noteworthy," says the *Chicago Tribune* in a recent issue, "that about 7,000,000 bushels of wheat have been shipped from Chicago since the beginning of the year, only one-seventh of which has been exported. The rest has 'gone where the woodbine twineth,' that is 'amid the scenes of home.' Some of the people who cannot understand the recent sharp decrease in the visible supply seem to ignore the fact that our domestic consumption of wheat, including that used for seed, averages 800,000 bushels per day all the year round, and that farmers have delivered scarcely any wheat this spring."

OUR MINNEAPOLIS LETTER.

[From our own correspondent.]

A CHATTY EXPOSITION OF THE SITUATION—MILLERS INCLINED TO HOLD UP FLOUR VALUES—STOCKS OF WHEAT GRADUALLY BEING REDUCED—SOMETHING ABOUT THE TOWNSEND FAILURE—BUSINESS NOTES AND PLATFORM GOSSIP.

We are able to record quite an improvement in the milling business here since our last letter, though it has not, perhaps, been as marked this week as before, on account of the decline in wheat. Our millers seem to have gained much confidence, and hold their flour firmly. Prices were advanced about the 1st, and while orders were not plentiful, the inquiries were increased, and some sales were made at higher prices. One, and the principal cause of this increased confidence

on the part of the miller is found in the fact that winter wheat millers are running short of wheat, and are, in many cases, being compelled to shut their mills down in consequence. This leaves a wider field for the spring wheat miller to operate in, and with a plentiful stock of good wheat at his command, he is in the best of shape to take advantage of it. The gradual advance of wheat up to the first of the week also imparted a certain strength to the flour market. That cereal, however, has since taken a downward course, in sympathy with other markets, which has had the effect of making our millers feel a little gloomy again. Millers say that buyers had about arrived at the point where they would buy, when wheat tumbled, and influenced them to largely withdraw from the market in hopes of a more favorable opportunity being presented for making purchases. Our millers, however, feel that the supply of flour is to be limited, in proportion to the demand, and are not inclined to grant concessions—really looking for the market to take a turn in their favor.

The stock of wheat here is slowly melting away. In Minneapolis it has decreased from 2,350,000 bushels on April 25, to 2,125,000 bushels at this date. On April 25 the stock at St. Paul amounted to 965,000 bushels, while it is now 725,000 bushels. The receipts of wheat have been quite large for this time of year, during three weeks only lacking 400,000 bushels or less of being equal to the amount ground by the mills.

The following table exhibits the receipts and shipments at this point for three weeks;

| FLOUR. | | | |
|---------------------|-----------|------------|--|
| | Receipts. | Shipments. | |
| | Bbls. | Bbls. | |
| April 29, | 3,125 | 85,486 | |
| May 6, | 625 | 113,190 | |
| May 13, | 425 | 85,319 | |
| Total | 4,175 | 283,995 | |

| WHEAT. | | | |
|---------------------|-----------|------------|--|
| | Receipts. | Shipments. | |
| | Bus. | Bus. | |
| April 29, | 238,500 | 36,500 | |
| May 6, | 303,500 | 29,000 | |
| May 13, | 410,500 | 34,500 | |
| Total | 1,009,500 | 100,000 | |

The Palisade mill, owned by Leonard Day & Co., and operated by the Washburn Mill Co., has been shut down for an indefinite time. A suit for \$10,000, said to be simply for the purpose of determining the priority of claims of creditors, has been commenced against the owners by the North Star Iron Works, for machinery furnished when the mill was enlarged. The mill does not seem to be in very good shape, and different rumors are afloat about it.

The mills will not have to be shut down to any extent during the summer, in consequence of the contemplated improvements to the west side platform, as some apprehend. The dull period of two weeks or more when changing from the old to the new crop, may be taken as an occasion to shut the water off. J. D. Edge, Jr., lengthy millwright, will build a fifty bbl. mill for F. M. Becker, at Beaver, Winona County, Minn. The new mill is to take the place of the one belonging to Mr. Becker which burned four months ago.

The Head Millers' Association convened on the 6th inst, and had an unusually interesting meeting. The millers excursion was broached and the vote was unanimous that it be held as usual. Another meeting is to occur Tuesday evening, to further canvass the matter and settle on a date and where the excursion shall go. Lake Minnetonka seems likely to be again chosen this year at which it will be held and June 14th or 21st, will undoubtedly not be far from the date that will be settled upon. The millers' excursion is becoming the event of the year, and the boys will endeavor to make it more auspicious than ever this season.

The Accident Relief Association which was organized among the employees of the three Washburn mills some seventeen months since, has just paid out its first accident benefit, two members having been hurt, on account of which they together drew \$67. As the officers receive no salary the above sum is about all that the members have thus far had to pay to keep themselves insured against accident.

The difficulty between the owners of the Union mill seem as far from adjustment as ever. The employees have been dismissed and the mill stands idle, in the hands of Receiver Yeates. It seems that the trouble is not in relation to the operation of the mill, but rather about other matters. There are suits pending, but so far they have been postponed from week to week.

The Phoenix mill was shut down about ten days, making repairs and lining up. This mill is one of the very steadiest running in the city, seldom if ever being shut down except for repairs, etc. The most of its flour is sold in the city, while the demand from the east is greater as a rule than can be supplied. It has a capacity of 250 barrels, and is operated by Stamwitz & Schober,

two pioneer German millers. Jas. Tamm is head miller, and a good one he is. They make a specialty of a straight flour. Mr. Schober departs this week on a trip to his old home in Germany.

J. H. Townsend & Co., millers at Stillwater, are embarrassed in consequence of the suspension of the Northwestern Car Co., of that place. The firm operate two mills of a combined capacity of 650 barrels, and both have been shut down pending developments. Senator Sabin is a heavy stock holder in the milling firm, as well as the Car Co., and the former is naturally affected by the suspension of the latter. It is hoped, however, that the embarrassment is only temporary, though what the condition of the firm will turn out to be is not certain. The affairs of the two concerns are somewhat mixed up, as Townsend & Co., have endorsed the paper of the Car Co., to a considerable extent. The two mills, with other assets, are valued at \$250,000. They were run steadily all through the winter and are reported to have done well, having orders ahead for about 8,000 barrels of flour at the time closed down. It is thought that at least one of the mills will be started up and operated by the receiver.

J. Silas Leas has been in the city over a week, departing Wednesday. The three-high Davario mill, which his company is handling, is meeting with marked favor in Minneapolis. There is one set in the Petit and two in the Washburn C mill, and reports of their work is quite flattering. Two sets are now being placed in the Anchor mill for a seventh break. They are being talked about a great deal by millers, and are evidently in for a large business.

Walker Bros & Co., of London, have commenced suit against J. A. Walkley & Co., flour commission merchants of this city, to recover \$4,154 on a flour deal. In brief, the London firm claim that flour with which Walkley & Co., filled certain contracts to them was not up to samples previously forwarded and by which the plaintiffs resold the flour before its actual arrival, and that they lost the sum named in consequence.

The Washburn mills are the exception referred to. These three mills have been run to their utmost capacity for four successive weeks, and must have averaged over 6,000 bbls per day. This would be one-third of the total amount of flour turned out by Minneapolis during the past three weeks, that these mills have alone made; and in the same they have consumed not less than half a million bushels of wheat.

The Milwaukee Dust Collector Mfg. Co., has employed Alex. Ingram a millwright of this city, to superintend the erection of a 100 barrel mill somewhere in Wisconsin. J. J. Atkinson has become head millwright for this company, and it would seem that it was about to embark in the mill building business.

Chas Craver a stone dresser formerly employed in the Craver roller mill, has commenced suit against the proprietors of that mill for \$10,000 damages, on account of about two years ago losing three fingers and a thumb from one of his hands, by getting them between a pair of unprotected roller gears.

John Kelner, than whom there is probably not a better known head miller in these parts, is traveling for Kirk & Fender, being in the south west. J. H. Hogan, representing the same firm is also making a pilgrimage in the same section of country, making St. Louis the radiating point.

From fifteen to seventeen of the mills of the city are kept in operation, and the flour production averages not far from 18,000 barrels daily. With one exception, the mills are running only at a moderate capacity, probably not exceeding two-thirds to three quarters of their full capacity.

A syndicate having for its prime object the booming of Mandan, Dak., with H. J. Burton at its head, is expected to build a 200 barrel mill at that place this summer. Henry Crosson, the millwright, is getting up the plans. There will be a large elevator built with the mill.

The Minneapolis Mill Co., which owns the west side water power, claims that its lessees use more power than their leases entitle them to, and has commenced the measurement of the amount of water used by each concern, so that the exact status of the case may be known.

A 500,000 bushel elevator will be built on the Omaha track in North Minneapolis by Baker, Potter & Co. They will lay out \$75,000 on the elevator and other improvements.

The Starrett Elevator Co., has stomached St. Paul as long as it could, and will hereafter have its main offices in Minneapolis.

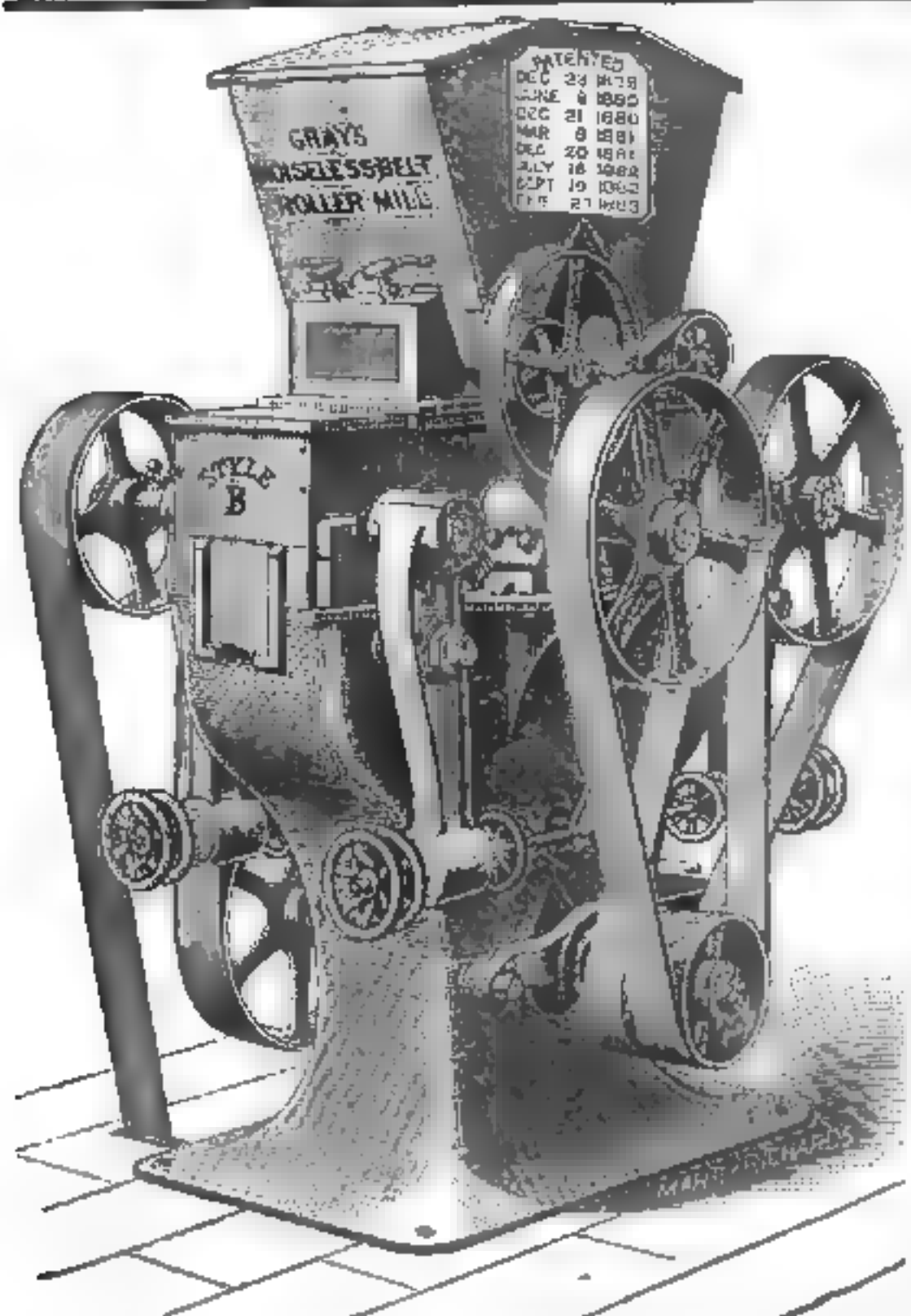
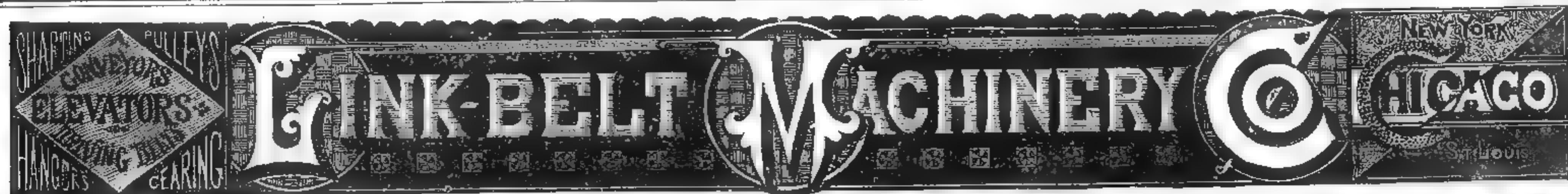
Wm. Cheever, lately in charge of the Freeman mill at La Crosse, Wis., is working in the Washburn A.

Wm. H. Mathers has been promoted to second in charge in the Lincoln mill at Anoka.

Alex. Ingram, of this city, has received a patent on a roller mill.

CALEB.

Minneapolis, May 17.



GRAY'S NOISELESS BELT ROLLER MILLS. STYLE "B" for SMALL MILLS

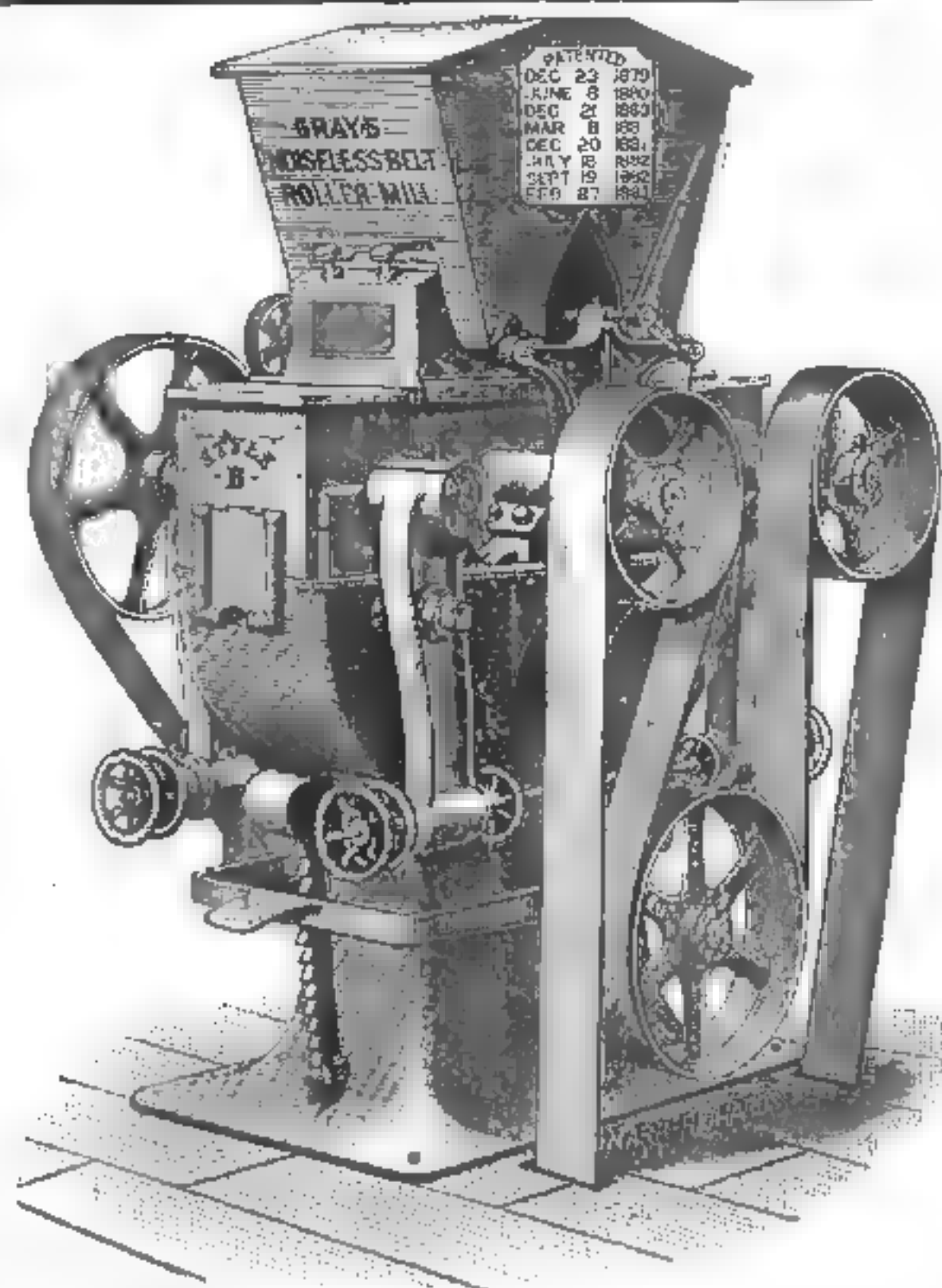
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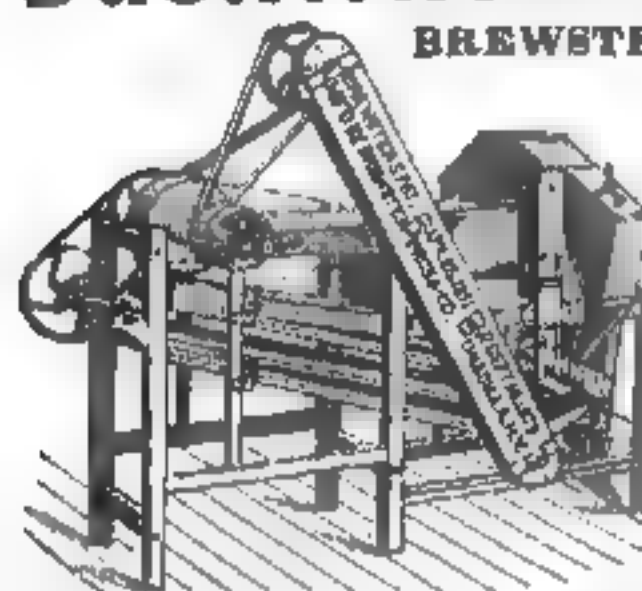
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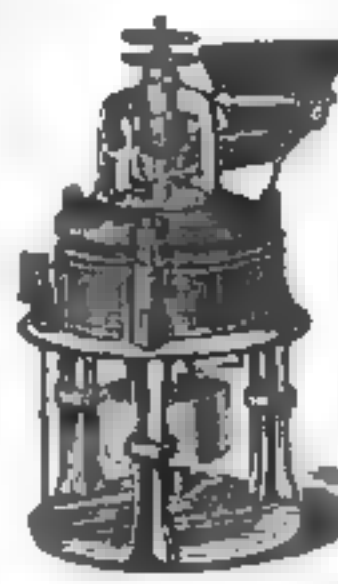
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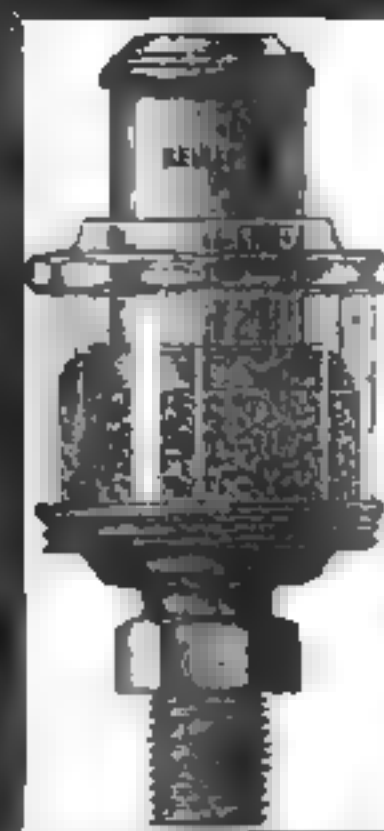
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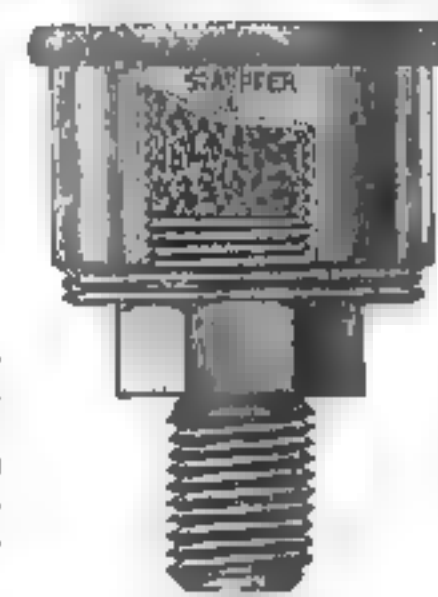
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pounds. Send for Illustrated Catalogue.



THE IMPROVED MORSE ELEVATOR BOLT

THE KNICKERBOCKER CO.

MILWAUKEE, WIS., March 20, 1884.

Gents: Your Bolt is working well and beats anything in the way of a Bolt, centrifugal or any other, that has yet been invented. As a general thing we do not like to certify to a thing on so short a notice, but your machine is an exception. We will experiment as we have opportunity and see how many more machines we can profitably use. Wishing you all success, we remain,

Your truly,

E. SANDERSON & CO.

THE KNICKERBOCKER CO.

JANESVILLE, WIS., April 9, 1884.

Gents: I am fully satisfied with your Morse Elevator Bolt, it is a wonderful machine, and is as far ahead of the old Bolting Chest of Reels as the roller process is ahead of stone milling. Enclosed find draft for the No. 1 sent me, please forward the two No. 1 Bolts bought of your agent, one is for bolting patent stock, and the other low grade stock.

Yours Truly,

C. W. HODSON.

THE KNICKERBOCKER CO.

CLEVELAND, OHIO, April 3, 1884.

Dear Sirs: Regarding the Morse Bolt we cannot say enough in its praise. We have three different makes of Centrifugal Reels in our mill, and having given the Morse Bolt a fair trial alongside of them we can certify as to their merits. We have demonstrated the Morse Bolt will handle double the quantity the Centrifugal will and produce a better flour and cleaner finish. In fact any material in the mill can be handled with more economy and better results than upon any system we know of. The Morse Bolt being under the complete control of the operator is a point in its favor that cannot be over-estimated, and we believe when its merits are more widely known it will supercede the present mode of bolting.

Yours respectfully,

M. C. DOW & CO.

The Knickerbocker Co., Jackson, Mich.



BUSINESS DEPRESSION.

THEORIES with regard to business depression vary with different countries. A deficiency of money was stated to be one of the causes of the stagnation of business in the United States a few years ago; now we are told by M. Victor Bonnet in an article contributed to the *Revue des Deux Mondes* that an exaggerated note circulation of the Bank of France, and the superabundance of the currency, paper and metallic, are the primary cause of the present crisis in trade. Forty years ago, he remarks, France had a specie circulation of 3,000,000,000 of francs, and only from 400,000,000 to 500,000,000 of notes. There is now probably in the country 4,500,000,000 of gold, 3,000,000,000 of silver, with 3,000,000,000 of notes or more than three times the former amount. Trade has, no doubt, since increased in a large proportion, but with railways and telegraphs there are greater facilities for moving capital about, and 1,000 francs in specie now renders as much service as 3,000 or 4,000 formerly. Compared with the total of 10,500,000,000 francs of currency in France, England has only 4,500,000,000, Germany, 4,200,000,000, and Italy 2,634,000,000. A further danger in France, he believes is that 3,000,000,000 of it consists of silver, which has lost from 15 to 16 per cent of its value. The consequence of this abundance of paper facility of commercial relations is cheap money, which encourages speculation and high wages.

THE BRITISH SHIPPING TRADE.

The shipping trade of the United Kingdom is at present in a state of inertness, which is in striking contrast to the exceptional activity which prevailed a year or two ago, writes a correspondent of *Brad-streets* from Glasgow. British shipping companies are experiencing bad times, and the inability of some of the leading companies to declare a dividend afford startling evidence of the serious depression which prevails. Two years ago steam shipping was in a state of unusual prosperity, and immense additions were made to the mercantile marine, but a decided reaction has set in, and today the shipping interests are worse than they have been for many years.

The depression began last year when freights dropped to absurdly low figures, and it has contained to such an extent that many owners have laid up their vessels in the hope of effecting an improvement in the market by diminishing the amount of competing tonnage. Apart, however, from the question of its effects on freights the policy of "laying up" has become an absolute necessity, for to continue running vessels at unremunerative rates would undoubtedly bring about disastrous results. By withdrawing steamers that cannot be profitably employed the ship-owners save insurance premiums and prevent the further loss which unremunerative ventures would incur. As a matter of fact the discharging of crews and the withdrawal of vessels from their ordinary runs has become so general that the unemployed tonnage has assumed alarming proportions. At the various ports on the northeast coast of England, where the depression is severely felt, 100 steamers, of an estimated gross tonnage of 100,000 tons, have been laid off for want of employment. As a natural result, the northern ports are crowded with discharged crews, and seamen's wages have dropped to the extent of \$2.50 a month. Fleets of idle vessels have been moored up at all the other ports in the

country, and though complete returns are not available for the whole of the United Kingdom, yet competent authorities estimate that there is 25 per cent. too much tonnage in existence for the work there is to do.

NOTES.

Budapest is establishing a large oil refinery, which is to work the oils from the Caucasus.

It is estimated that the exports of wheat from South Australia in 1884 will reach 11,000,000 bushels.

The Russian Government, it is said, has decided upon a large issue of gold coin. Ingots of specie have been issued from abroad.

The diets of Baden and Wurtemberg have voted to increase the duties on grain in the hope of stimulating a sufficient home supply.

The electric railway between Sachsenhausen and Offenbach has been completed. The line comprises twelve stations, and has so far been worked with success.

In Buenos Ayres a terrible storm prevailed on May 1. Houses were destroyed, rivers overflowed and numbers of lives were lost. The rainfall was the heaviest in fourteen years.

Alexandria, Egypt, reports, under date of April 14, wheat crop promising, although not out of danger from the hot winds that usually prevail from the middle of April to the middle of May.

Much uneasiness is expressed in Russian government circles at St. Petersburg, over the immense emigration from Finland to the North-western States of America, which has been noticeable ever since the beginning of the emigration season this year.

Madrid takes the pre-eminence among the capitals of Western Europe as a centre of expenditure and consumption, possessing practically no producing industries, and consequently labor on a large scale has only one application—namely, in building.

The state of depression in the British shipping trade can be estimated from the fact that during the first half of April the number of vessels at present lying idle in the Tyne was 63; in the Wear, 23; at Hartlepool, 74; and in the Tees, 2—in all, a 124, representing a gross tonnage of 130, 136, or a capital of £910,952, and 1,560 men out of employment.

Much colder weather has been experienced during the latter half of April in France doing some damage to the vines, fruit trees and the rye crop, but wheat, so far, continues to promise well. The wheat trade has ruled without much animation, in spite of the more encouraging reports from abroad, and any improvement has been difficult to maintain, owing to the continued bad sale of flour. Farmers, however, refuse any further concession, and it is only a question of revival of demand to provoke an upward movement in values.

The *Mark Lane Express*, of May 12, in its review of the British grain trade for the past week, says: Trade weakened under the influence of sunshine. To-day wheat was dull, owing to the heavy foreign supply, with values against sellers. Flour weaker. Maize 6d@15 dearer, and scarce. Off coast market dull; supplies liberal. There were 20 arrivals; 5 cargoes were sold, 6 were withdrawn, and 6 remained. For cargoes on passage and for shipment values were moderate. Sales of English wheat the past week were 70,583 quarters at 38s 2d, against 67,430 quarters at 43s for the corresponding period last year.

The British labor market, April 30, as reported by the *London Labor News*, was again unsettled, owing to the depression in the iron trade, among ship-builders and in the colliery districts. Reductions of wages was a prominent topic, and its discussion and occasional practice were fruitful causes of the unsettled condition of the industries mentioned. Building and railway construction, however, were reported good. There was some demand for labor in Lancashire, where the weaver threaten to strike. The lace-makers' strike at Nottingham continued, and its effects were injurious. Emigration was brisk, "especially to Canada and Queensland."

The total number of failures in the United Kingdom and Ireland, as reported weekly by *Kemp's Mercantile Gazette*, continues to show a surprising decline as compared with the records for like periods in 1883 and 1882, the total as against that for the week ending April 19, 1883, showing a decline of 73 per cent., from 211 in the latter, to 56 failures in the week ending April 19th last. For that week, in 1882, the total was 256. England and Wales, in the third week of April had 33, as against 190, and 234 respectively in like periods in 1883 and 1882; Scotland had 19, as compared with 19 and 22, and Ireland 4, as

against 2 last year, and none (reported) two years ago.

The long-continued drought and the great heat of the weather are beginning seriously to affect the prospect of the crops in the planting districts of East India, says the *Corn Trader's Journal*. With the exception of two or three light and local showers, there has been no rain in Bengal and Behar since Christmas. In Behar the fierce hot winds are rapidly burning up the Indigo crop. A worse district is Chupra, where the indigo will turn out very badly should the present weather continue for a week longer. Things are not quite so bad in the Tea and Jute districts; but in these, too, rain is much wanted. At Simla the water supply has fallen so short that work on the new Government offices has been suspended, and 5,000 workmen have been sent to their homes. From all parts of the Bengal Presidency there is a cry for rain.

The South Australian wheat crop, harvested in January last, is estimated by the *South Australian Register* at 17,112,600 bushels from 1,850,000 acres, being an average of 9½ bushels per acre. The estimated consumption by the *Register* is 5½ bushels per capita for 312,000 population, and 1 bushel per acre for seeding 2,000,000 acres, leaving available for export on this basis, 13,396,500 bush. (It may be questioned if one bushel per acre is not very small for seed. The usual estimate for seeding in these colonies has been 2½ bushels per acre.) The exports from January 1st to March 8th, 1884, have been 2,384,904 bushels of wheat, and 17,953 tons of flour, being equal in flour and wheat to 3,192,729 bushels of wheat. The early estimates of yield of the South Australian wheat crop per acre was 10½ bushels, and is now placed at 9½ bushels. It is quite probable that the output will be even less per acre than the latest estimates of the *Australian Register*, as for years the output has been below the early estimates.

The *Cologne Gazette* gives the following data about German mercantile settlements in western Africa: In Little Popo there are two firms from Hamburg, and one from Bremen established. In all there are fourteen Hamburg firms established on the west coast, maintaining some sixty branches. Of these there is one each in Sierra Leone, Liberia, Akkra, and Whydah; two each in Little Popo, Lagos, between Cemeruns and Cacusoo bay; three in Gabun, and one in Ambriz. Breman firms are maintaining houses in Akkra, Little Popo, Kata, Lagos, Angra, Pequenna, and in Adda on the Volta. The important position occupied by Germany in the west African trade is well illustrated by the fact that two lines of steamers, one German and one English, are making regular monthly trips between Hamburg and the coast of west Africa, while neither Holland nor Belgium, nor even France—although she has colonies in this country is maintaining regular steamship communication with west Africa.

The following is, according to the *Miller's Gazette*, an outline of the three day's proceedings at the approaching Miller's Convention, at Stockton-on-Tees, by which it will be seen that plenty of business, as well as pleasure, has been provided. On Tuesday, June 24, the Convention meets at the Borough Hall, at 10 a.m. for the annual meeting of the Association, the election of officers, etc., for the ensuing year, and for the reading of certain American correspondence by the Secretary. Lunch will be provided at a cost of about 2-6, and afterwards the millers will have an opportunity of inspecting the three mills at Stockton-on-Tees, all on Seck's roller system, viz.: Mr. Appleton's, Mr. French's, and Mr. Watson's. On Tuesday various papers will be read and discussed; lunch following, as on the previous day; after which a trip will be taken by steamer to Middlesborough, to visit the iron works, etc., then a visit will be made to the neighbouring sea-side resort of Saltburn-by-the-Sea, the evening being devoted to pleasure at Mr. Appleton's charming establishment, Woodside Hall, Eaglesville Junction. Thursday morning will be devoted to the reading of the remainder of the papers promised, and the afternoon to visiting Rokeby and Barnard Castle.

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EUREKA COIL SPRING
Warranted to Prevent Backlash. Over 1,000 in use. Equilibrium Driving Pulley Prevents Side Pull on Mill Spindle.
JOHN A. HAFNER,
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CORUNDUM POLISHER.

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For facing down high places on the buhr, this tool has no equal, and can be done much better and in one-sixth the time than with the mill pick. It is much larger, cuts better, can be used on either face or furrow; can be used until the corundum is entirely worn out on one side and then turned on the other side. Has over four times the amount of corundum and when the corundum is worn out can be replaced in the handle at a small cost. Sent by express, \$3.50. Satisfaction guaranteed, or money refunded. Address
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STEAM PUMPS
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HOT & COLD WATER.
\$35.00 AND UPWARDS.
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ANTI-FRICTION
Roller Detachable
CHAIN BELTING
FOR
ELEVATORS CONVEYORS, Carriers, Etc.
AND FOR
DRIVING PURPOSES.
A Superior Chain Belting
Manufactured and Sold by
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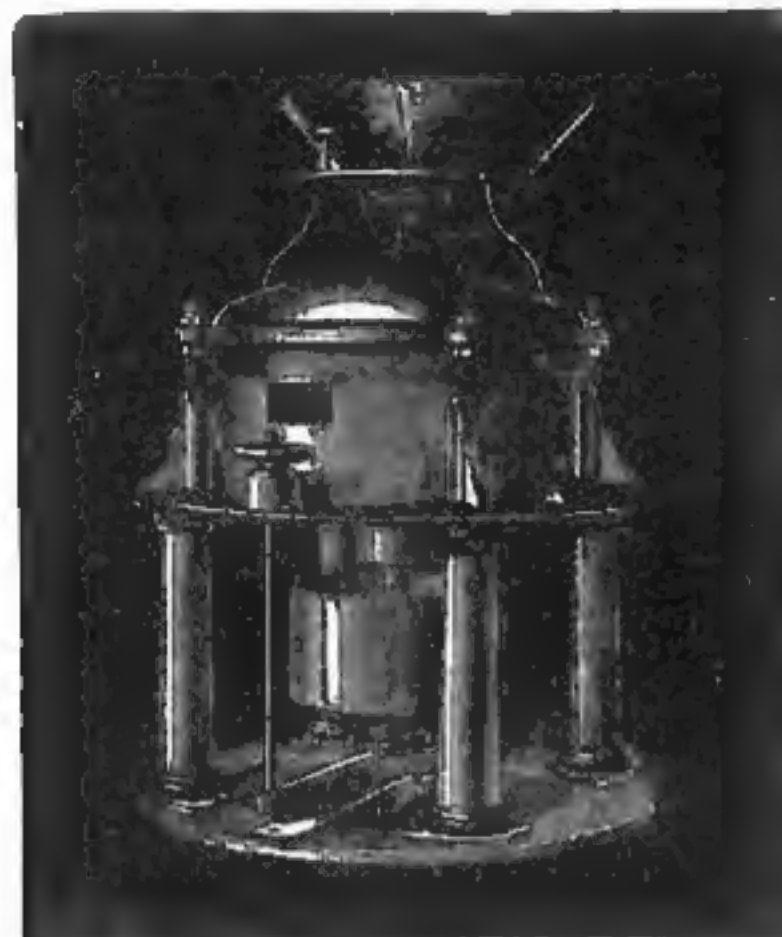
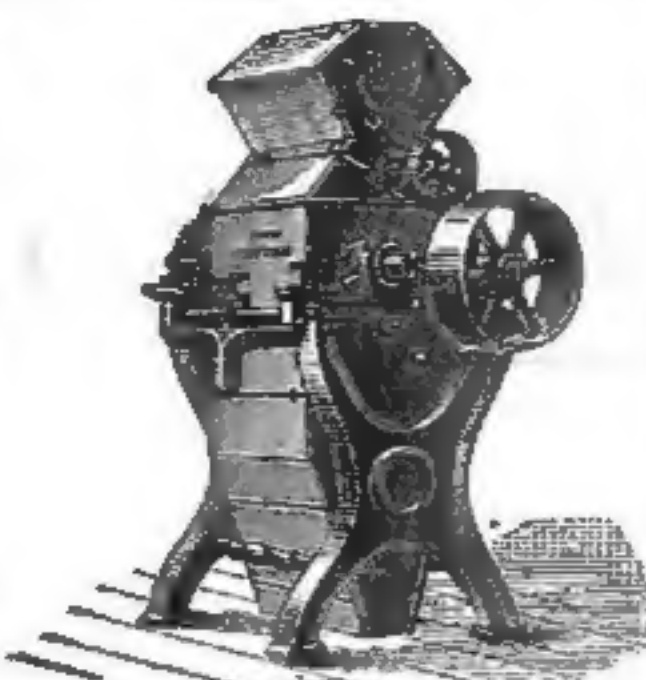
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Reduction Rolls, Bolting Cloth, Purifiers, Middlings Mills and Bolting Chests. General Mill Furnishing Supplies.

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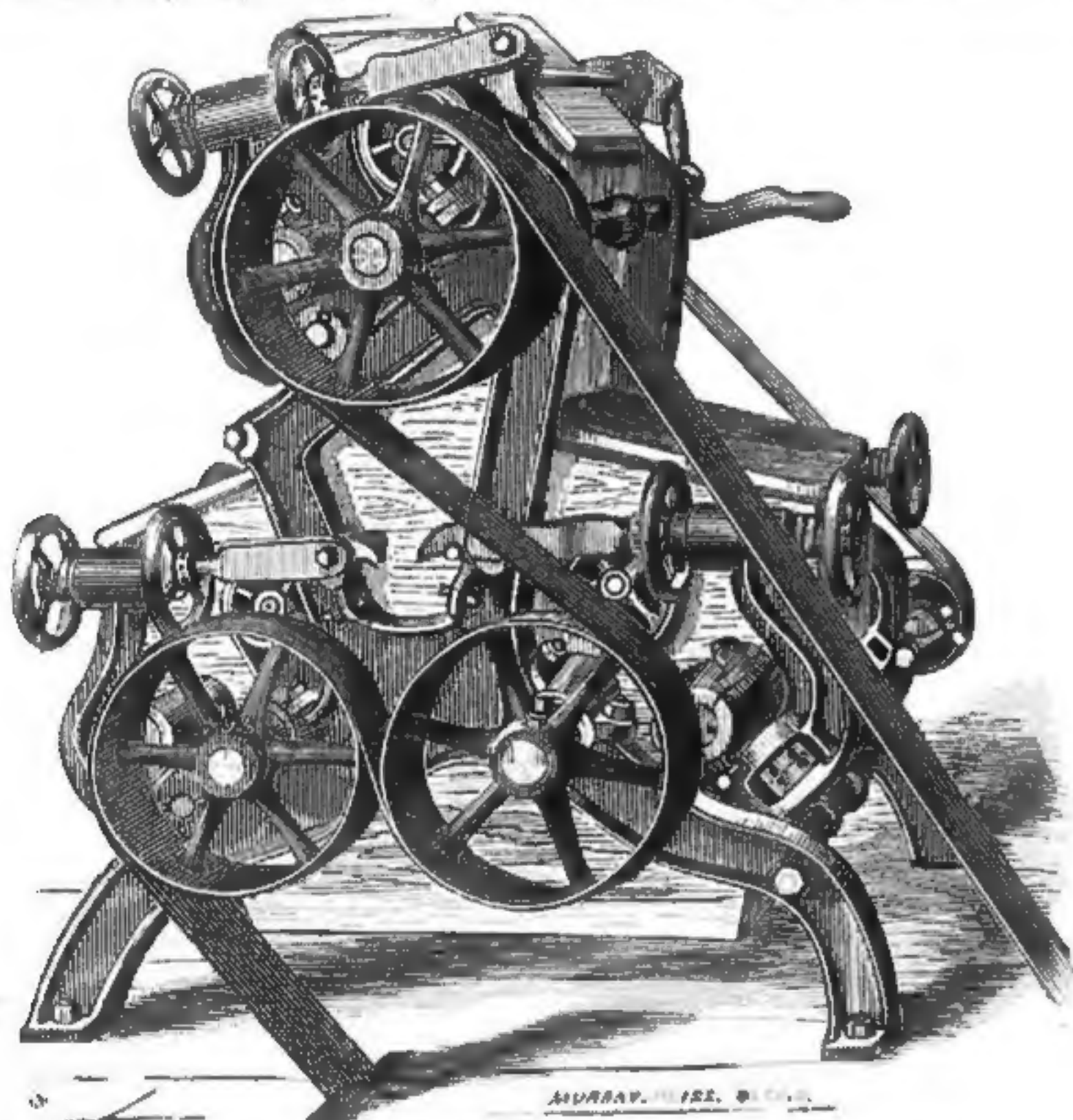
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We can make small mills equal to large ones. Write us for Rock Bottom Prices, and Undoubted Reference of parties using our Breaks and Rolls. By adopting our system you can save money, also save from 8 to 10 per cent low grade over other systems, and keep both quality and yield up to the best.

THE MILLER CO., CANTON O.

HOOVER'S IMPROVED DIAMOND MILLSTONE DRESSING MACHINE.

ADAPTED TO ALL KINDS OF DRESSING.

No 1, to face and crack \$25.00
No 2, to face, crack, dress furrows, and will dress any size stone..... 45.00
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Will do as good work, and is more easily adjusted than any other machine. Sent on 30 days' trial. Address for circulars, containing full information.

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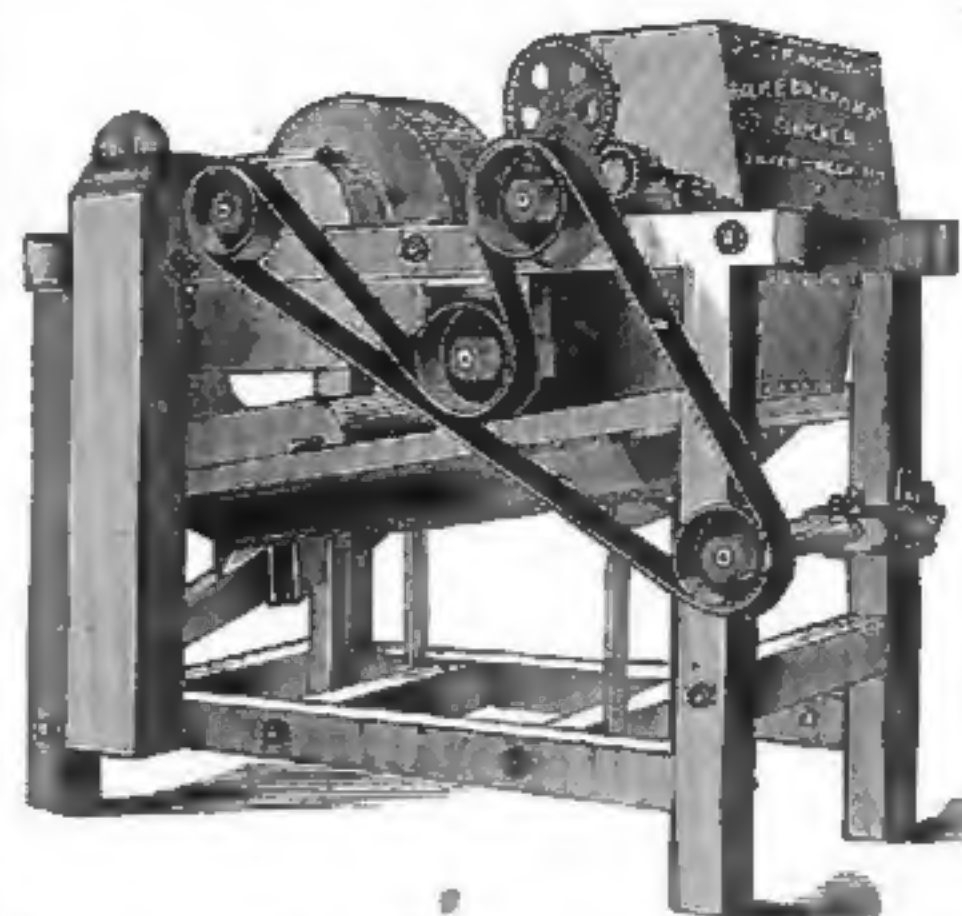
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WILL FIND IT TO THEIR DECIDED ADVANTAGE TO INVESTIGATE THE CONCEDED MERITS OF

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ITS SUCCESS IS BEYOND QUESTION. ITS VALUE HAS BEEN DEMONSTRATED IN MORE THAN 800 CASES. IT IS THE ONLY PERFECT BUCKWHEAT SHUCKER IN THE WORLD.

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A DECIDED IMPROVEMENT OVER ANY ROLLS WE HAVE SEEN.

Lancaster, Pa., Aug. 31, 1883.

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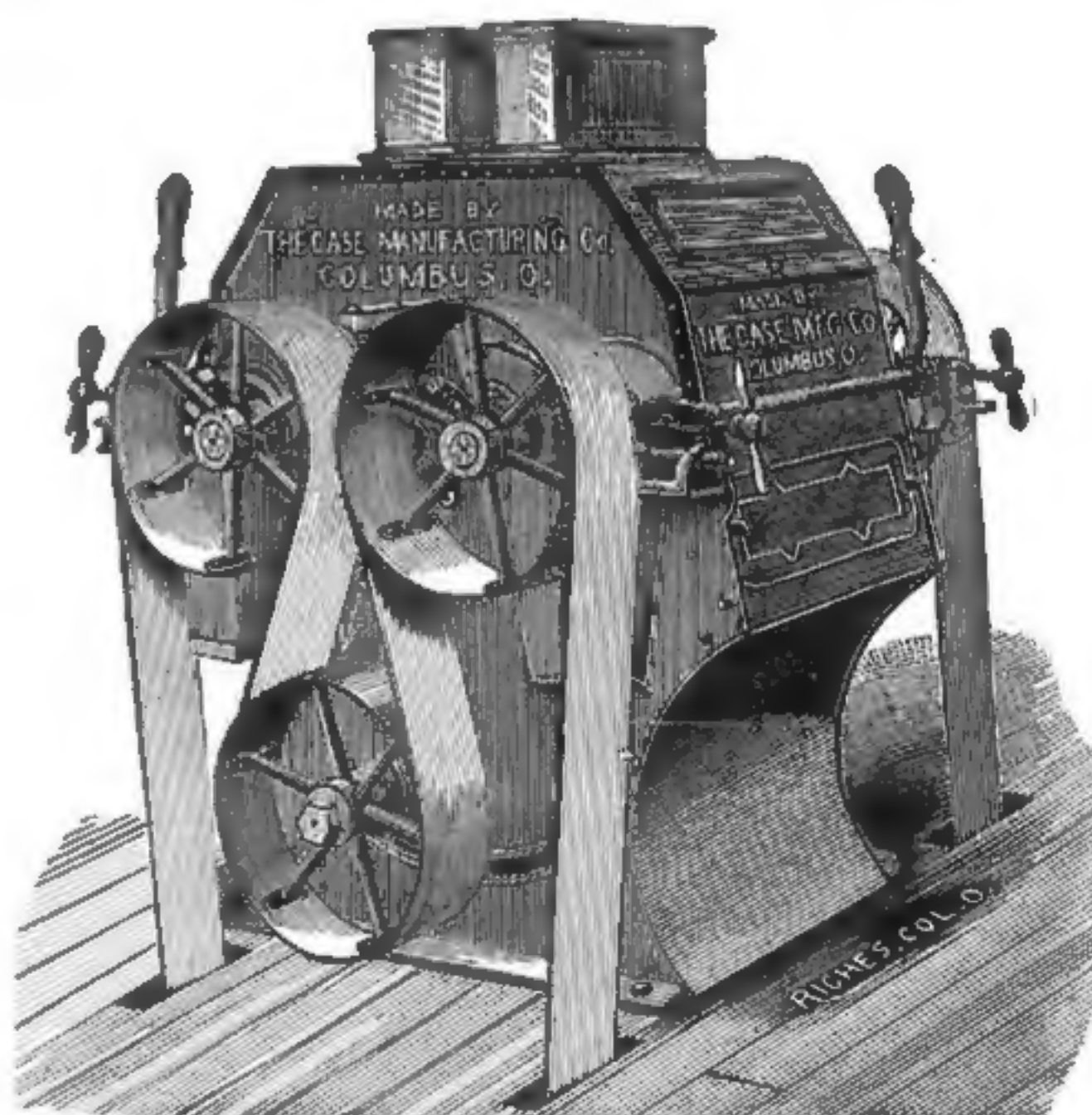
GENTLEMEN: We have now been running your double Roller Mill about 30 days, and it works to our entire satisfaction. The adjusting device by which both ends of the rolls are adjusted at the same time is a decided improvement over any rolls we have seen, as it guarantees uniform work, and the journals being always in line, keeps them running cool. Our bran is well cleaned as you will see by sample sent you. Yours truly, LEVAN & SON.

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We find many custom millers who want to be improved but do not wish to enter the Gradual Reduction. To such we would say that we have a Half-High System that is worthy of investigation. While we advocate full Gradual Reduction this partial system will greatly improve Buhr Milling, and the cost is comparatively light.

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Office of THE MILLING WORLD.
 Buffalo, N. Y., May 21, 1884.

The almost panic of last week, in monetary circles very naturally had its effect upon the grain and flour markets, but other causes also operated to effect a temporary decline in values, chief among which might be said to be the collapse of the clique to corner June wheat. The announcement of the failures in Wall street on Wednesday last caused a drop in wheat of $3\frac{1}{2}$ ¢ per bushel, and the feeling of uncertainty aroused by these failures reduced business to a very low point not only in New York but in Chicago. Thursday opened up with the promise of a return to normal conditions owing to the presence of some export demand, but on Friday the market was nervous and excited values fluctuated considerably, finally resulting in a decline at the close of $\frac{1}{4}$ ¢ for option and $\frac{1}{2}$ ¢ for spot. Commenting on the situation, the *New York Produce Exchange Reporter*, says: We have had a very chaotic and depressed wheat market chiefly due to the financial distress and sundry failures in Wall street, which created great distrust and depression in most branches of business. The decline in values at the Produce Exchange has not been so great as many had counted on, considering the great falling off in the demand and absence of any market for what little surplus we have left, but with a return of confidence we shall have more demand and from day to day as the situation becomes better understood, it will be seen that the surplus in the country is quite as small as we have stated and ere the middle of July good old winter wheat will be difficult to find in any quantity, and will take very high prices to draw it out of its hiding places.

The failures in Wall street, have almost put a stop to orders for wheat from Europe and we cannot look for a resumption of the shipping demand until confidence is restored, and values become settled. It is now very plain that the exports from this coast for the ensuing seventy days will not exceed one third of those for the corresponding time last year, therefore Western Europe must look to other countries for supplies to carry them into August.

The *New York Commercial Bulletin* of yesterday says: "Not a single ripple of excitement has passed over the floor of the Produce Exchange to-day. In grain circles business has been very slack. There is a mid-summer apathy shown by the speculative fraternity. There were rumors of further failures in Wall street, but they produced no effect on grain except perhaps to intensify the prevailing dullness by making the outside element still more conservative. The substantial feature of the whole day's business is the larger demand from exporters; holders of cash wheat have let down the price of red winter stock $\frac{1}{2}$ ¢ a. 1c, and that, with cheap freight, has made business possible. The export takings to-day have been largely of ungraded winter wheat, with, however, a fair business in spring wheat also reported. The weather has been favorable for crops. It has been whispered around that a large slice will come off the visible supply of wheat this week; the Chicago figures, according to rumor, are to show a reduction of two million bushels; this is merely rumor. The option business has been exceedingly light; the

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aggregate of transactions is the smallest for a week past; business has dragged all day. At the lowest point, May showed a decline of $1\frac{1}{4}$ ¢; June, $1\frac{1}{4}$ ¢; July, $1\frac{1}{4}$ ¢; August, $1\frac{1}{4}$ ¢, and September, $\frac{1}{4}$ ¢. There was subsequently a recovery of $\frac{1}{4}$ ¢ a. $\frac{1}{4}$ ¢. This was based on the greater activity of exporters. The market closes lower than Saturday's figures by $\frac{1}{4}$ ¢ for May, $\frac{1}{4}$ ¢ for August and September. The tone of the market at the close is steady. The New York stock of wheat is 100,713 bushels smaller than it was a week ago, 451,308 bushels smaller than it was a year ago, and 530,392 bushels larger than it was two years ago. The stock of No. 2 red winter wheat is now 1,484,556 bushels—a decrease of 24,584 bushels from last week's figures.

It is hard work to sell flour, and yet the market is firm; or rather, the pretensions of holders are firm. In this case the firmness of holders does not explain the inactivity of business; the secret of the prevailing dullness is found in the want of confidence shown by the trade and by exporters; they will buy what flour they need for the day's wants, and there they stop. In the meantime flour is coming forward in moderate quantities, and accumulation of stock is no matter of consequence. The movement this way might furnish a larger proportion of low grades to advantage, as there is a market for number twos, supers and low extras, and difficulty in finding them even at the current prevailing full (comparatively full) prices. All the trade brands sell slowly. Rye flour is in fair demand; the sales are mainly at $\$4$.

FOREIGN EXCHANGE.

The market for sterling opened firm, but subsequently became weak, owing to the continued pressure to sell and a light demand. The posted rates closed at 4.85 for 60 days' and 4.87 for demand. The actual rates ranged: At 60 days' sight, 4.83 $\frac{1}{2}$ @4.84; demand, 4.85 $\frac{1}{2}$ @4.86; cables, 4.86@4.86 $\frac{1}{2}$; commercial, 4.81 $\frac{1}{2}$ @4.82. Continental exchange quiet and rather weak; francs, 5.18 $\frac{1}{2}$ @5.17 $\frac{1}{2}$ and 5.15 $\frac{1}{2}$ @5.15; reichsmarks, 95@95 $\frac{1}{2}$ and 95 $\frac{1}{2}$ @95 $\frac{1}{2}$; guilders, 39 $\frac{1}{2}$ and 40 $\frac{1}{2}$.

The closing posted rates were:

| | 60 days. | 90 days. |
|--------------------------|--------------------|--------------------|
| London..... | 4 85 | 4 87 |
| Paris francs..... | 5 15 $\frac{1}{2}$ | 5 15 $\frac{1}{2}$ |
| Geneva..... | 5 15 | 5 12 $\frac{1}{2}$ |
| Berlin, reichsmarks..... | 95 $\frac{1}{2}$ | 95 $\frac{1}{2}$ |
| Amsterdam, guilders..... | 40 $\frac{1}{2}$ | 40 $\frac{1}{2}$ |

BUFFALO MARKETS.

FLOUR—City ground clear Duluth spring $\$5.25$ @ $\$5.75$; straight Duluth spring, $\$5.75$ @ $\$6.00$; amber, $\$5.75$ @ $\$6.05$; white winter, $\$5.75$ @ $\$6.00$; new process, $\$5.75$ @ $\$6.00$; Graham flour, $\$5.25$ @ $\$5.50$. Western straight Minnesota bakers, $\$5.75$ @ $\$6.00$; clear do, $\$5.25$ @ $\$5.75$; white winter, $\$5.00$ @ $\$6.25$; new process, $\$4.75$ @ $\$7.25$; low grade flour, $\$3.50$ @ $\$4.00$. CORNMEAL—Market steady, with a fair demand. Coarse, $\$1.20$; fine, $\$1.30$ per cwt. RYE FLOUR—In fair demand at $\$3.75$ @ $\$4.25$. OATMEAL—Ingersoll, $\$5.75$; Bennerman's granulated, $\$6.00$; Schumacher's Akron, $\$6.25$ per bu. BUCKWHEAT FLOUR—Demand fair at $\$3.50$ per cwt. WHEAT—Dull and weak. Sale 5,000 bu. No. 1 hard Northern Pacific at $\$1.10$ June. At the Call Board for this grain, $\$1.11$ asked, $\$1.08$ bid cash, $\$1.11$ asked, $\$1.07$ bid May and June, $\$1.11$ asked $\$1.10$ bid July, $\$1.12$ asked $\$1.11$ bid Aug. CORN—Dull. Sales three car-loads No 2 at 61c on track. No 2 in elevator offered at 59c. At the Call Board 59c asked for 5,000 bu lots cash; 60c asked for car-lots and to arrive. 59c asked May; 59 $\frac{1}{2}$ ¢ June; 61c July. OATS—Mixed Western 38@38 $\frac{1}{2}$ ¢. No. 2 white 41c, sample do 40 $\frac{1}{2}$ ¢; new State from wagons 44@47c. BARLEY—Weak. Sales nineteen car-loads No. 1 Canadian at 88c on track. RYE—No 2 Western nominal at 72c.

A STARTLING COMPARISON.

The *Express* of this city says: "The shrinkage of real or supposed values from the booming figures of 1881, to the lowest quotations touched during the semi-panic of last week, is a record to frighten investors and to make one thankful that the decline has been gradual enough to enable the business interests of the country to adjust themselves to it. A few of the figures as to leading shares actively dealt in on the Stock Exchange, tell a story that needs no

explanation nor comment to make it vivid and impressive:

| | May 1881. | May 14 1884. |
|-----------------------------|-----------|-------------------|
| Union Pacific..... | 130 | 41 $\frac{1}{2}$ |
| Denver & Rio Grande..... | 112 | 10 |
| Louisville & Nashville..... | 109 | 34 $\frac{1}{2}$ |
| New Jersey Central..... | 112 | 73 |
| Western Union..... | 187 | 49 $\frac{1}{2}$ |
| Wabash preferred..... | 94 | 12 $\frac{1}{2}$ |
| New York Central..... | 155 | 107 $\frac{1}{2}$ |
| Lake Shore..... | 135 | 90 $\frac{1}{2}$ |
| Michigan Central..... | 126 | 65 |
| Burlington & Quincy..... | 182 | 114 |
| Rock Island..... | 147 | 111 $\frac{1}{2}$ |

It is to be said, however, that while these enormous shrinkages have diminished individual wealth, they have not diminished the aggregate wealth of the country. The roads quoted above, and all the other railroads are still where they are, and doing the transportation work of the country as efficiently as before. Losses on the Stock Exchange are not losses in the sense that fire and shipwreck are. The actual destruction of the fruits of labor in the latter cases is good cause for general regret, but the mere shifting of values from hand to hand which we call 'losses' on the Stock Exchange, need draw no tears from anybody but the actual gamblers."

JAMES S. MCGOWAN & SON have opened an office in Room 60, Board of Trade building, this city, to do a general grain commission business. A specialty will be made of choice milling wheats. Mr. McGowan has had twenty-five year's experience in the grain business in this city, being for a number of years Chief Inspector of the Board of Trade. All grain will be shipped under his immediate supervision and no charge will be made for inspection. Millers purchasing wheat in this market will undoubtedly find it advantageous to communicate with this firm.

"It is true that the aggregate volume of business has not perceptibly increased," says the *Montreal Gazette* of the 16th inst., "but the outlook is viewed with equanimity, inasmuch as the business being done is on a safe basis. There is a continued and very marked absence of speculation, outside of the regulation speculative articles, and among distributing merchants and jobbers the disposition is to purchase only for absolute requirements, or what may be necessary to maintain assortments, as has been manifested for some time. As the consumption of merchandise throughout the country is probably as large as usual, it follows that business is being conducted on legitimate principles. Stocks, as a rule, are well under control, and importations are carried on in a conservative spirit. It must be admitted, however, that some branches of trade are particularly depressed, notably grain and iron, these two standing out with unpleasant prominence. The shipping trade also is in a sad plight, and all interested are engaged

in discussing what steps should be taken to provide a remedy. A good harvest will go far toward placing commerce in a more satisfactory position, but crop prospects are yet too indefinite to have much substantial effect on the situation."

DULUTH WHEAT REPORT.

The following tables show the receipts of Duluth wheat at this port, and the shipments of same at the close of business for the week ending Saturday 17th ult., as also the number of bushels in store at this port upon that date, and at Duluth on the 15th ult.

| In store May 1, 1884 | Bus. |
|----------------------|---------|
| | 130,810 |
| RECEIPTS. | Bus. |
| At Niagara A & B | 240,202 |
| " Tift Elevator | 73,053 |
| " City " | 50,484 |
| | 363,739 |
| | 494,549 |

| From Niagara A & B | Bus. |
|--------------------|---------|
| " Tift Elevator | 103,507 |
| " City Elevator | 31,555 |
| " Other Elevators | 10,387 |
| | 20,515 |
| | 165,964 |

| | |
|----------------------------------|-----------|
| In store May 19, 1884 | 328,585 |
| In store in Duluth May, 15, 1884 | 2,446,573 |
| In sight stored | 2,775,158 |

The first arrival of the season was the Prop. Siberia from the Sault Ste. Maria, May 5. The first arrival in 1883 was the Prop. Japan, May 24.

JAMES S. MCGOWAN & SON, SHIPPING AND COMMISSION MERCHANTS.

Choice Milling Wheats a Specialty.

Room 60 Board of Trade Building,
 BUFFALO, N. Y.

No Charge for Inspection.

JOHN C. HIGGINS & SON,

Manufacturers and Dressers of

MILL PICKS.

168 KINZIE ST., CHICAGO.



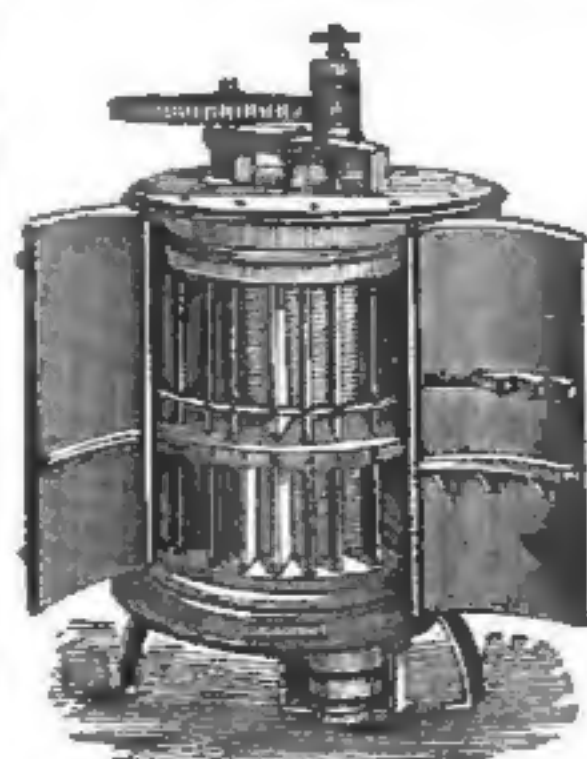
GOLD MEDAL—SPECIAL, 1st ORDER OF MERIT.



Picks will be sent on 30 or 60 days' trial to any responsible Miller in the United States or Canada, and if not superior in every respect to any other pick made in this or any other country, there will be no charge, and I will pay all express charges to and from Chicago. All my picks are made of a special steel, which is manufactured expressly for me at Sheffield, England. My customers can thus be assured of a good article, and share with me the profits of direct importation. References furnished from every State and Territory in the United States and Canada. Send for Circular and Price List.

* **THE INK** *
 WITH WHICH THIS PAPER IS PRINTED
 IS MADE BY THE
QUEEN CITY PRINTING INK CO.
 CINCINNATI, O.

THE IMPROVED UNITED STATES BRAN DUSTER.



The brushes can be adjusted while the machine is in motion.

Those now using this machine can affirm to the great saving insured by so doing, as they very soon repay their cost.

EVERY MACHINE GUARANTEED TO GIVE SATISFACTION.

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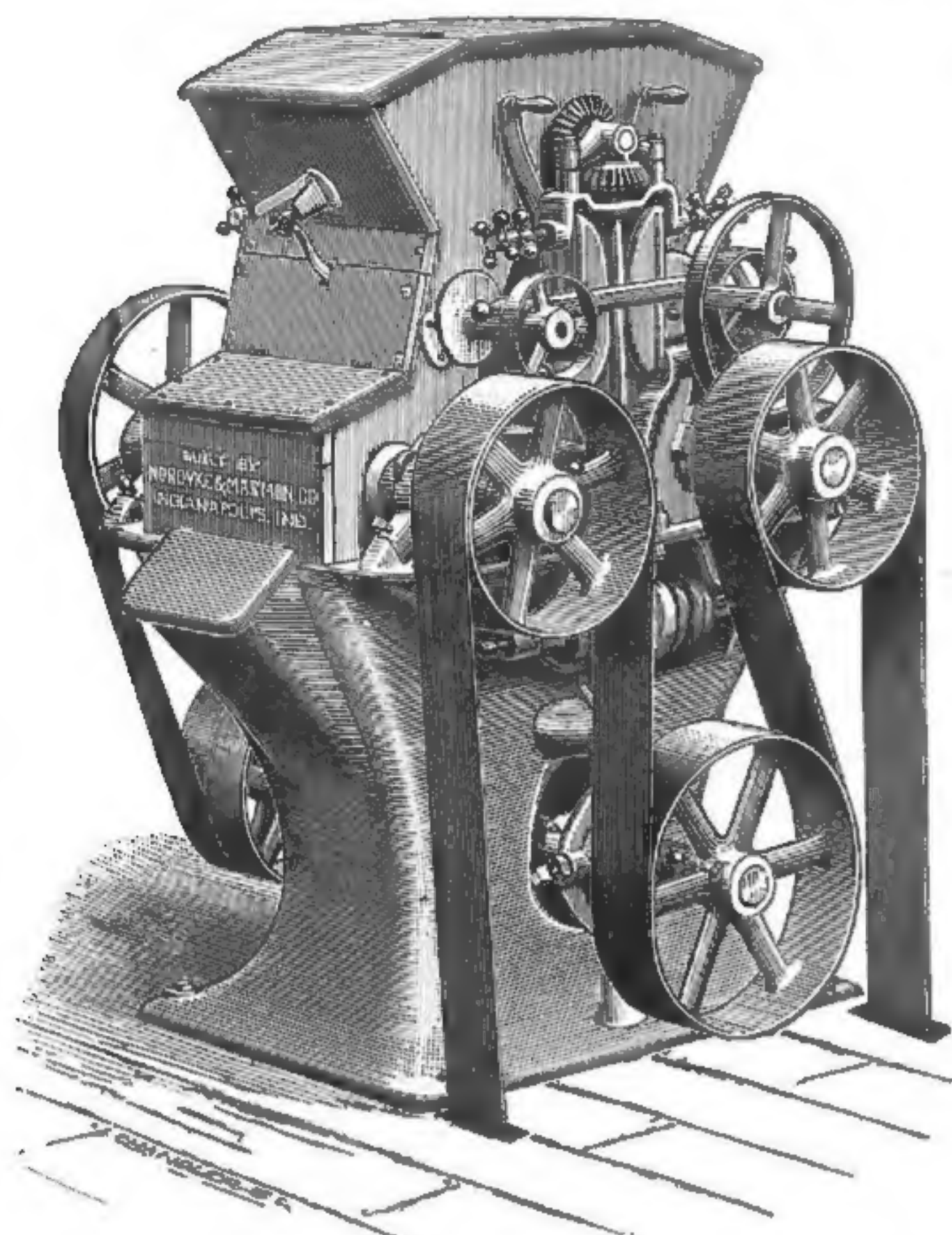
GEORGE OLIVER, CORNER MILL AND BROWN STREETS, ROCHESTER, N. Y.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Builders from the Raw Material of

ROLLER MILLS, CENTRIFUGAL REELS, FLOUR BOLTS.

WE ARE THE SOLE OWNERS FOR THE UNITED STATES, OF ALL THE PATENTS UPON THIS ROLLER MILL.



This Is the Only Roller Mill Made Having All the Essentials Needed In Successful Milling.

300 BARREL MILL IN MISSOURI.

Read what an Old Miller who has Thirty-Four Pairs of these Rolls in Constant Use, Says:

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.
Gentlemen: In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 33 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors, "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,
 Yours, etc.,
 R. H. FAUCETT, Pres.

300 BARREL MILL IN ILLINOIS.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND.
Gents: We started up our mill in June last year, and it gives us pleasure to say that your Roller Mills are doing splendid work and give us no trouble. Your milling program required no changes, and concerning yields, we get all the flour from the offals, and we sell our best grades in the principal markets of the United States at the highest prices offered for any flour. All the machinery made by you is first-class, and we would not know where to purchase as good.
 Yours respectfully,
 DAVID SUPPGER & CO.

125 BARREL MILL IN INDIANA.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.
Gentlemen: The 125 barrel All Roller mill you built us has been running all summer, and does its work perfectly. Before contracting with you for this machinery we visited many Roller Mills throughout the West and Northwest, built by the different leading mill-furnishers, and from all we could see, those built by you seemed to be giving the best satisfaction, and this is why we bought our machinery of you. Our mill comes fully up to your guarantees, and the capacity runs over your guarantees. The bran and offal is practically free from flour, and our patent and bakers' flour compares favorably with any we have seen elsewhere. I don't think anyone can beat us. Your Roller Machines are the best we have seen; they run cool, and the interior does not sweat, and cause doughing of the flour. Judging from our success, we would recommend other millers to place their orders with you.
 Yours truly,
 J. T. FORD.

Letters on file in our office from a large number of small roller millers giving as favorable reports as above. A portion will be published as occasion demands.

SPECIAL MILLING DEPARTMENT! Mill Builders & Contractors--Guarantee Results

Motive Power and Entire Equipment of a Modern Mill Furnished under one Contract.



MILL SUPPLIES { Everything Used in a Mill of Every Kind Always on Hand.

Leather Cotton Rubber { BELTING, BOLTING CLOTH

ELEVATOR BUCKETS, BOLTS, MILL IRONS, &C.

Prices Close and Quality the Best.

The Case Mfg. Co., Columbus, Ohio.

A 6x12 ROLL.

We are making the neatest and most substantial 6x12 Two and Four Roller Mills, smooth and corrugated, ever put on the market. Millers wanting small rolls (as well as large), will find ours well made, neat and complete. Every pair has our Patent Automatic Feed. The price is low down.

ADDRESS,

Case Mfg. Co., Columbus, Ohio.

THE BEST AND CHEAPEST COB CRUSHER

IN THE WORLD.

Steel Being Used in its Construction.

PRICE, 30.00.

CAPACITY 75 BUSH. PER HOUR.

Thousands of these Crushers are now in use, and giving entire satisfaction.

Please Send for Circulars.

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PATENT MILLSTONE CEMENT

Invaluable to Millers for Repairs and Seams in French

This is a new article of manufacture, and is common use by millers. It is much cheaper, son. It is perfectly harmless, containing nature and attains the hardness of French only fills the cavity, but adheres to and be-grinding. Good Millstones are now in use, composed entirely of this preparation. The



ing and Filling the Joints, Cavi-Burr and other Millstones.

greatly superior to the preparations now in and can be applied by an inexperienced per-son of a poisonous nature. It has the Burr Stone, wears evenly with it, and not comes a part of the Stone, and assists in

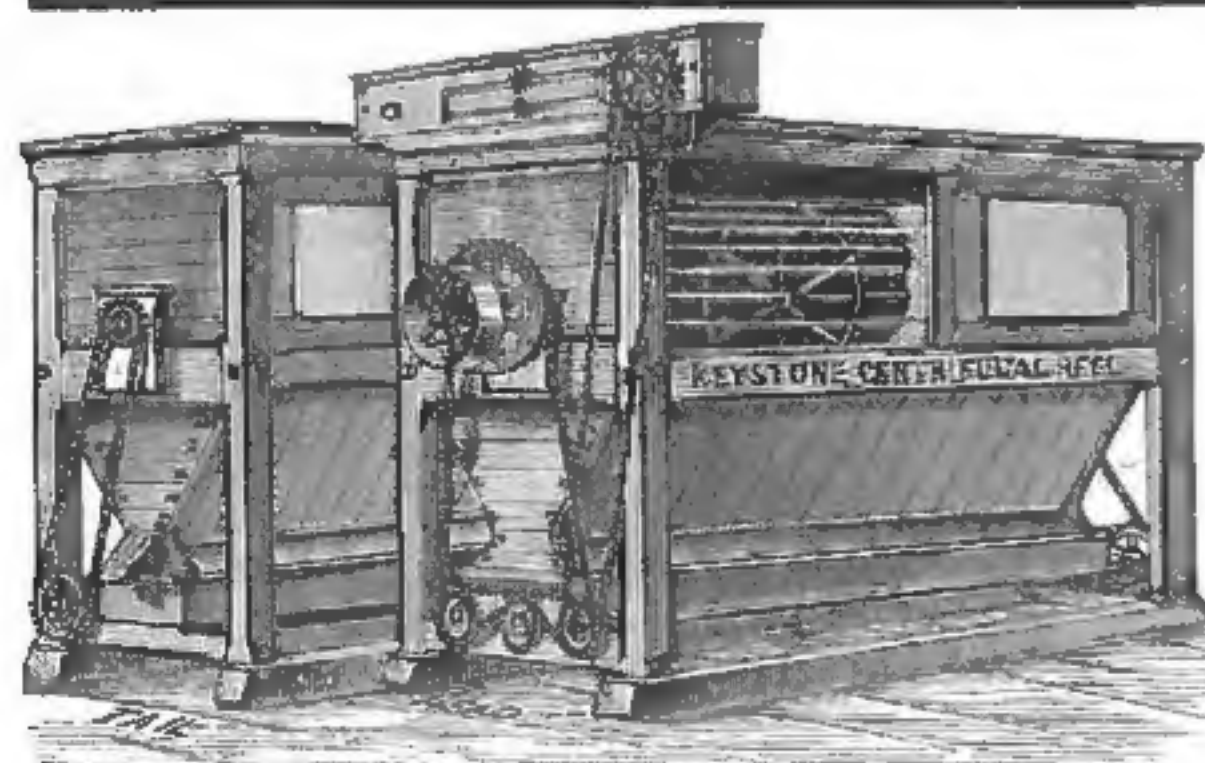
LEADING MAKERS ARE ADOPTING IT TO BUILD THEIR MILLSTONES.

For miller's use, it is put up in cases of about 50 lbs. Price per case, \$5.00. We cannot open an account for so small a sum, therefore Cash should be sent with order otherwise we shall send C. O. D. by Express, collecting for return of the money. For manufacturers, we furnish in bbls. of 300 lbs. Price upon application. Emery Rub Stones, for hand use in Finishing the Furrows and Faces of Millstones.

Union Stone Co., 38 & 40 Hawley Street, Boston, Mass.

Union Emery Wheels, Emery Wheel Machinery and Tools a Specialty. Wooden Pol-ishing Wheels, Grinders' and Polishers' Supplies. Catalogue on Application.

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KEYSTONE CENTRIFUGAL REEL

Drag Brush Feed, Tightest Heads, Best Results. Cheapest and Best on the Market. Adapted to all Kinds of Milling.

Mr. C. K. BULLOCK, PHILADELPHIA, PENN.

Dear Sir: The No. 3 "Keystone Centrifugal Reel" I bought of you works satisfactorily. I think it is one of the best machines I ever put into and would not do without it if it cost double the amount of your price list.

Yours truly,

YERKES, PA., Nov. 22d, 1883

JACOB H. LANDIS.

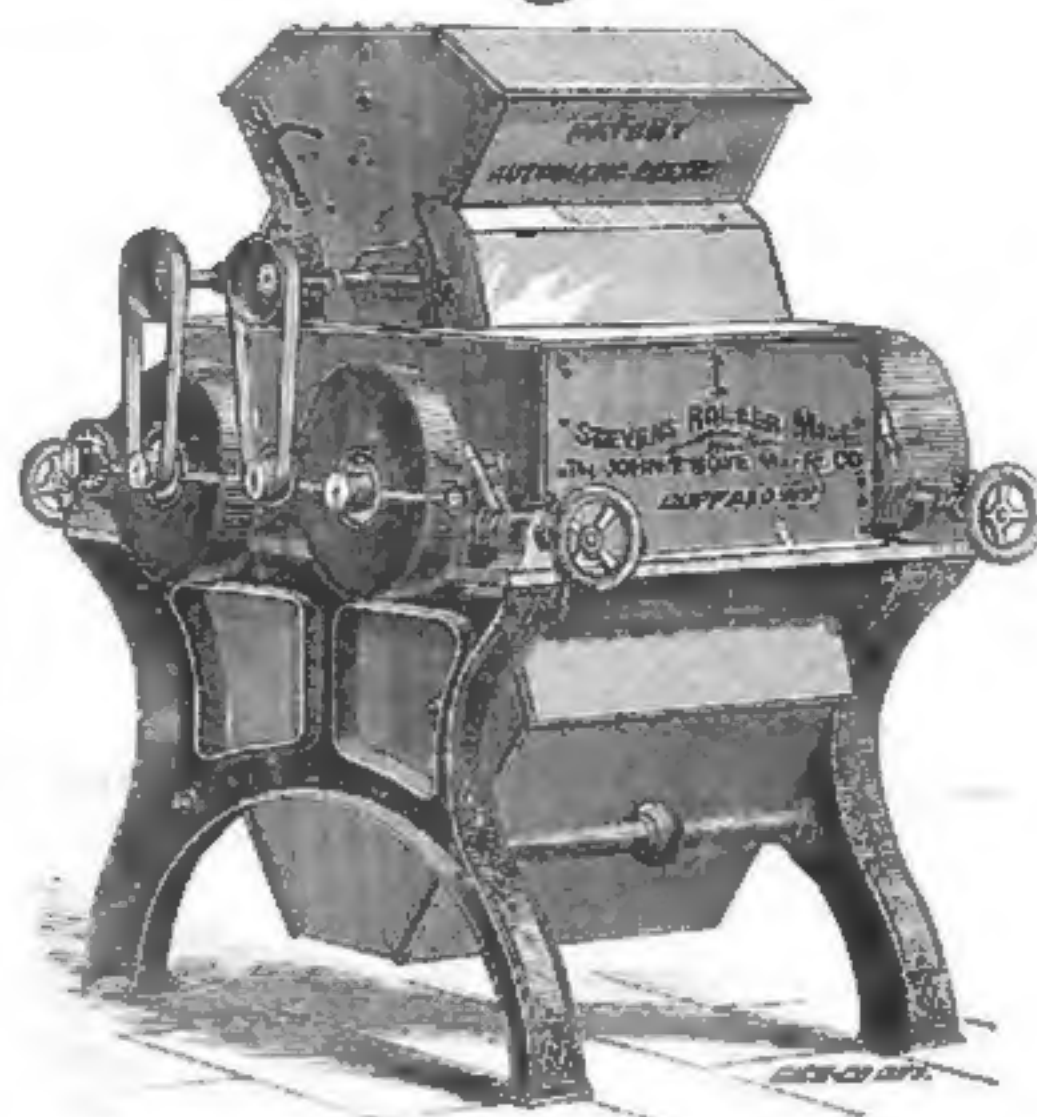
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C. K. BULLOCK, 1357, 1359, 1361 RIDGE AVE., PHILADELPHIA, PENN.

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Parties contemplating the erection of new mills, or improving and increasing the capacity of old ones, will serve their best interests by corresponding with and submitting their ideas to us.

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Concentrated Roller Mills,
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ALL WITH THE
Stevens Corrugation.



Simplicity of Construction, Positiveness of Action, Ease of Management, Less Liability to Get Out of Order, Less Power Required, Greater Capacity Obtained.

The Stevens Rolls are the most widely known and universally used of any roll in the world. Send for illustrated catalogue and price list.

THE JOHN T. NOYE MANUFACTURING CO., BUFFALO, N. Y.

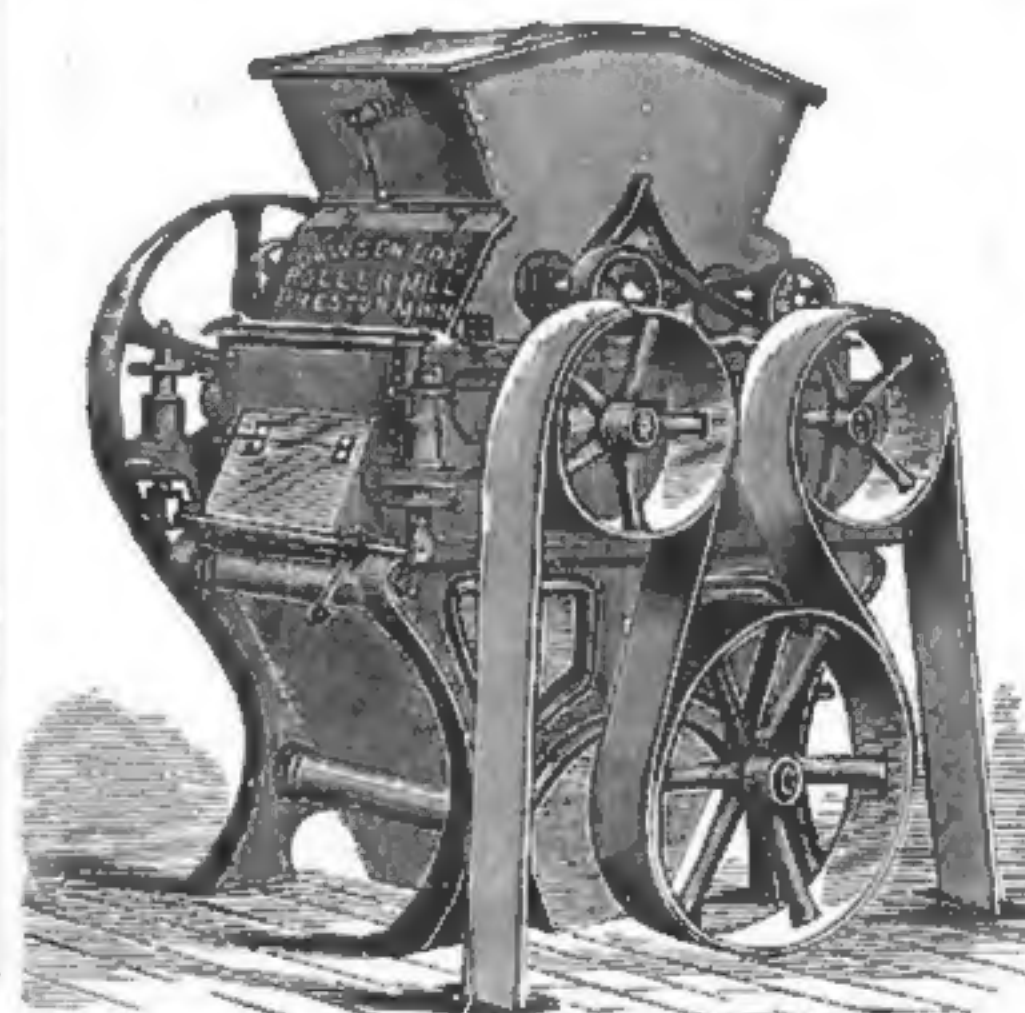
BEWARE OF SECOND-HAND STEVENS' ROLLER MILLS OFFERED BY ONE OF OUR COMPETITORS THEY WERE MADE IN 1881 AND HAVE SINCE PASSED THROUGH A FIRE.



THE BEST
BOLTING CLOTH
— IS —
C. SCHINDLER-ESCHER'S.
STRONG AND DURABLE.
Ask Any First-Class
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For It.

Dawson Bros. Granulating Roller Mill.

IN DOUBLE OR SINGLE FRAMES.



The "Dawson" Corrugation is the only one which will make all the breaks, being equally as good on *Last* reduction as on *First*. The only mills made with non-friction metal bearings. Licensed under patents No. 217,513; re-issue 10,091 to George S. Cranson, and No. 280,689 to James Dawson. Most popular *Non-Cutting* Rolls in use. Have none of the bad mashing qualities of other non-cutting rolls. Conceded by all to make more middlings and less break flour, and broader and cleaner bran, than any roll made. The "New Idea," a roller mill and scalper combined, especially suited for small custom mills, now made by us, is a grand success. We are prepared to contract for building or remodeling mills on the complete or combined roller system. Having built several large mills in this vicinity, where we can show our roller mills in full operation, we shall be pleased to have calls from any one needing mill machinery and roller mills. Plans and Estimates furnished.

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Manufacturers of the Celebrated Cranson-Dawson Roller Mill, Mill Builders and Furnishers,
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